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MONTHLY INTERNATIONAL FEATURE ISSUE

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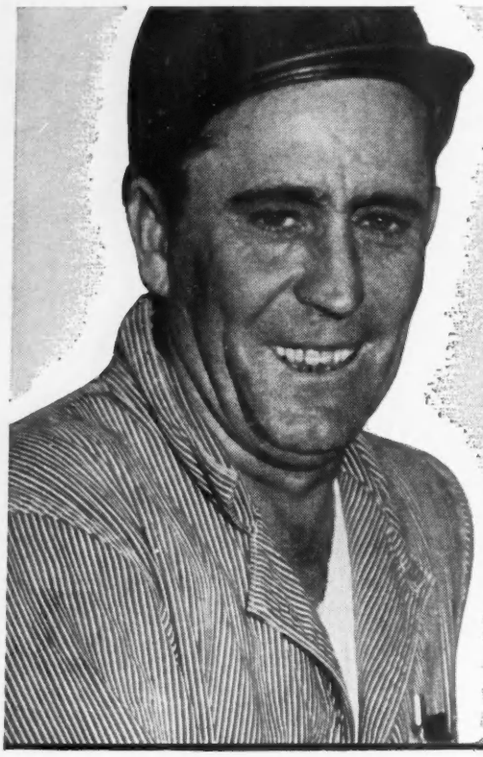

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The OIL WEEKLY

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Looking Ahead
WITH THE EDITOR

PERMEABILITY of tight sands has been increased in the region near the producing section of the bore hole by the use of high explosives which open fissures and break down sand cementation. This practice has long been recognized to increase secondary recovery in pumping wells where the fluid flow into the well bore is restricted by barriers of various types. Such procedures are fast becoming a science, and after much research on the subject of explosives, a new formation penetrator has been developed. By this method, it is possible to use smaller amounts of explosives and direct their force into a limited section in the well.

WELL EXPLOSIVES

Adapting techniques used by the U. S. Army in World War II, the new process utilizes a "hollow-head" or "shaped" charge to obtain a more directional force from the explosion. By so directing the force of explosion, it is possible to control the effectiveness of the charge in such a degree as to penetrate thin sections and not affect the sands above or below these sections being opened. A descriptive article, "Formation Penetration with Shaped Explosive Charges" by Robert H. McLemore of Well Explosives, Incorporated, will appear in the next issue of THE OIL WEEKLY.

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THE OUTLOOK

With petroleum consumption currently exceeding all forecast estimates for immediate postwar, outlook is for higher demand in coming years than previously predicted. One economist with a major oil company now predicts demand for U. S. petroleum in 1946 will average 5,206,000 barrels per day, or about 140,000 less than in 1945 when so much was being used by military forces. This same economist believes requirements will increase to 5,650,000 barrels daily by 1950, and then reach 5,900,000 barrels per day by 1956.

* * * *

A House Labor subcommittee has opened the study of labor and industrial relations requested by President Truman with a view to framing permanent legislation for the peaceful adjustment of labor disputes, and observers predict that information developed by the group, particularly as to industry's views on such legislation, will be widely used in the coming congressional campaigns. Many industrialists invited to testify before the subcommittee have been hesitant about accepting.

* * * *

The Federal Power Commission is getting into its files extensive information on the use and value of natural gas as an industrial raw material which may have an important influence on commission thinking on end-use regulation and conservation. Even though gas reserves are discussed in astronomical terms, Interior Department and consumer-industry representatives have made it clear that they favor the utmost conservation.

* * * *

The State Department's proposed international trade conference to lay the groundwork for world-wide elimination of artificial trade barriers has finally been set for October 15 in London. Originally suggested for early this year, the meeting will pave the way for the negotiation of new reciprocal trade agreements between this country and 17 other nations, probably next spring, in several of which oil may figure.

* * * *

Indications are beginning to spring up that the government is preparing for another trust-busting drive. Attorney General Tom C. Clark recently had something to say on the need for insuring the perpetuation of small business, the Senate Small Business Committee has released a report on wartime concentration, Secretary of Commerce Wallace reports a sharp increase in corporate mergers and the acquisition of small firms by larger ones since V-J Day, and the administration is preparing to expand the Federal Trade Commission so that it may make industry-wide investigations of unfair trade practices.

* * * *

Tire manufacturers will have to cutback their rubber consumption during the last half of the year, but total output will be several times that of 1945 and the situation will get progressively easier thereafter. What might have been a very satisfactory synthetic rubber position has been made a little difficult by the lack of grain from which to make alcohol for the production of synthetic beyond that possible in the plants using petroleum.

* * * *

Stripper-well operators will continue to get their subsidy even after crude price ceilings are removed, but the big question is how much they will get. RFC is to scale down gradually subsidy payments, but is given no formula and is free to reduce oil subsidies at its own discretion. Consensus, however, is that subsidy rates will drop in more or less direct proportion to increases in posted prices and stripper-well operators will continue to get relief until industry price scales make them self-supporting.

* * * *

Four years of unprecedented demand for oil has caused the industry to give increasing attention to partly depleted areas and both the U. S. Geological Survey and the U. S. Bureau of Mines are engaged in making detailed studies in secondary recovery work in the fields of the southwest.

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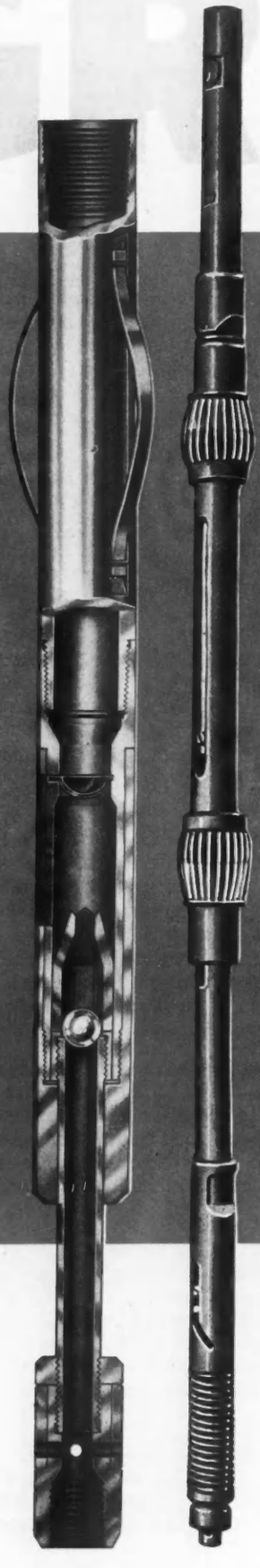
Announces the appointment of exclusive well cleaning service agents for Texas and Louisiana.



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Adequate Space for Texas Oil Agency

ALTHOUGH Texas oil producers pay almost 1½ million dollars annually through a special tax for oil and gas enforcement, the work of the Oil & Gas Division of the Texas Railroad Commission is being hampered by lack of adequate office facilities and a too small engineering and clerical staff.

Both the industry and the commission are to blame for the situation, because neither has proposed the advancements that would correct the conditions. The situation is not the fault of the State Legislature nor a lack of financial funds, as many are prone to believe. The Legislature has approved the requests of the commission for appropriations, and there has been a surplus in the funds for years.

During the fiscal year ended August 31, 1944, receipts from the special enforcement tax totaled $1,302;681.54. Expenditures were $449,362.61, leaving a balance of $853,318.93; which was transferred in June, 1945, to the state's general revenue fund. During the fiscal year ended August 31, 1945, the special tax amounted to $1,478,657.95 with total expenditures of $480,216.17. On June 20, 1945, there was $146,681.07 transferred to the general revenue fund, leaving a balance of $851,760.16.

The last session of the Legislature was in the spring of 1945. At that time it appropriated to the commission all the money that the commission itself requested. Naturally, it did not appropriate more. It was at this time that salary increases for engineers were provided and if the money was insufficient, the Commission erred in failing to ask for it. The Commission selected the building it is in. If the converted residence in use is too cramped, it is the fault of the Commission. Similarly, the industry itself did not urge the Commission to expand its staff or its quarters before or during the time the Legislature was in session.

It is time for the industry and the commission to take steps to correct the situation. Perhaps this will be done, for a definite movement seems to be afoot to use part of the funds to construct an adequate building. The legislative session to appropriate money will not be held until January, 1947, but in the meantime the industry and the commission should be studying their needs and making plans to seek the necessary legislative appropriation.

* * *

Perhaps most important (of our tasks) is the replenishment and extension of our crude reserves. We have great confidence in the ability of our geological and production people to do this . . . The present ceiling price on crude does not provide a return sufficient to allow producers in general to carry on the vigorous exploration which must be undertaken if we are to find new oil in quantity.

—EUGENE HOLMAN, President
Standard Oil Company
(New Jersey)

Tribute

THE oil industry lost a valued worker and Texas lost a high-minded, valuable citizen when E. L. Smith, for many years president of the Texas Mid-Continent Oil & Gas Association, passed away in Dallas last week. He gave unselfishly of his intelligently directed time to his industry and his community. He will be missed not only by his friends but by many who had never met him personally.

System on Trial

PARTIAL lifting of price controls confronts free enterprise with a great risk and responsibility, but at the same time with a great opportunity to prove its worth.

If prices go to high levels and remain there long, it not only will insure a return of controls but it will pave the way for socialistic schemes. This would be the best evidence that proponents of government control could wish. They would play up the failure of an uncontrolled economy to protect the consumer. The public then would have less confidence in private enterprise, and it would be much easier for planners to step in and say the government must do more.

On the other hand, if industry provides enough production to keep prices at reasonable levels, its prestige will be enhanced with the public and it will be more difficult for proponents of government control to present a good case. In America, where capacity to produce is enormous, it should not be difficult to produce enough goods to discourage hoarding and speculation—providing strikes do not continue to cause plant shut downs.

The free enterprise system is on trial, and it behooves all business to make strenuous voluntary efforts to produce as much as possible.

Please . . . Can You Help Us Out?

THE OIL WEEKLY'S supply of the 1946 WORLD OIL ATLAS, published as the second edition of the May 20 issue, despite the large number of extras printed, is completely exhausted and orders from all over the world are being received daily for additional copies. The State Department, Washington, wants 30 copies for important points, this oil company wants one or two, that one wants 10 copies, another wants 25. And so it goes.

THE OIL WEEKLY will pay $1 each for several hundred copies if any of our subscribers prize them less than those who are writing in for them. *If you have a copy you will part with for $1, write us to that effect,* and we'll send you stamped envelope to bring it back to us, and send you the $1. Do not send in your copy until you hear from us in reply.

Address letters to Circulation Manager, THE OIL WEEKLY.

SIMPLICITY IS THE FIRST REQUISITE OF WELL CONTROL

"Know how" comes from experience

The ability to plan a given procedure and then put the plan into operation to satisfy a problem comes with experience. In such a highly specialized field as planning and building systems of well control, "know how" is necessary.

Gray Systems of Well Control came into being from the clearing house of thought of over 500 methods of completion, an experience and "know how" gained from more than 20 years of work to meet all kinds of conditions. Gray Tool Company is an organization of men who, over a period of more than 20 years, have practiced studying the problem as a whole and understood that the desired results could not be obtained except through the coordination of the numerous heterogeneous group of individual parts and fittings made by specialists into a coordinated planned system of operation.

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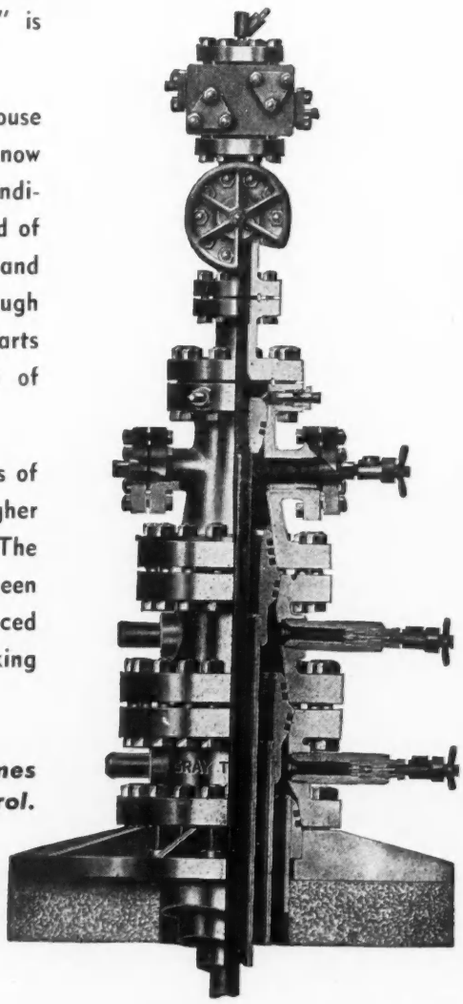
The whole is greater than any of its parts. "Know how" comes from experience in planning coordinated systems of well control.



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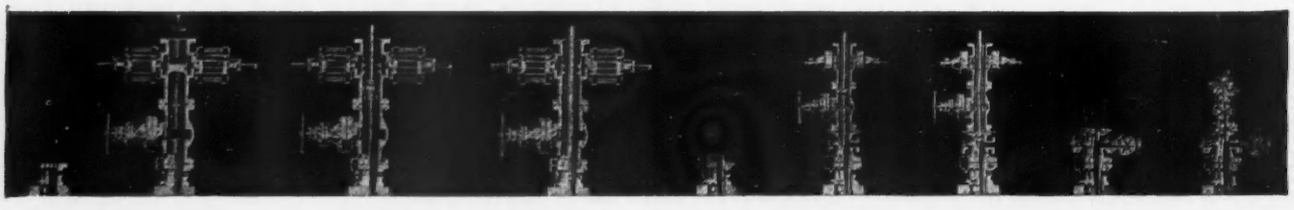


Casing Head Attached | Drilling | Running Casing | Casing Landed | Drilling Control Equipment Removed | Drilling-in and Running Tubing | Tubing Landed | Control Equipment Removed | Manifold Attached

The Week's News

Krug and Council—Interior Secretary Krug, confident of industry support of the new oil and gas division, expressed the belief the National Petroleum Council can be of great assistance in developing a program to meet future petroleum requirements. The OGD is given a fund of $400,000 for operation during the current fiscal year. Page 13.

Favors Court Rule on Tidelands—Following in Ickes' footsteps, Krug is opposed to congressional action to relinquish federal claim to the tidelands, believes it to be a matter for determination by the court with Congress free to "give them away" afterward if title is held to belong to the government. Page 13.

Metals Continue Short—The metals situation continues bad and will be felt by the oil industry for a long time to come. Steel production may now be at the peak to be attained until a shortage of scrap is overcome; shortages of lead, tin, copper and zinc are world-wide. Page 12.

FPC Hearings—Effects of expansion of the natural gas industry upon employment in other industries, particularly in the fields of coke and coal, were aired at the FPC natural gas hearings. Page 15.

Petroleum Price Control—The Moore amendment providing for immediate de-control of petroleum was thrown out as Congress took final action on extension of the price control act until June 30, 1947, but stripper-well operators got a pat on the back in the form of instructions to the RFC to continue their subsidy until April 1, next. Page 10.

OGD Gets Set—A conference committee compromised nearly 300 differences between the House and Senate respecting funds for operation of the Interior Department during the new fiscal year. Included in the bill is money for the setting up of the new oil and gas division. Page 13.

Anglo-American Oil Pact—Ratification of the Anglo-American petroleum agreement is expected to go over until after the Congressional recess. Neither the State Department nor any senators appear prepared to press for immediate consideration. But if the Senate decides to stay in session after the House goes home—as has been suggested—the treaty may come up during the summer. Page 13.

API Expansion Plans—API directors meeting in Dallas plan for a broad postwar expansion program, and moved to increase the membership of the board by inviting the presidents of twenty oil trade associations to become ex-officio members. Production division chapters will be increased from 14 to 20. Page 14.

Big Plans for Peru—Peruvian legislation, expected to become effective in October, may provide the basis for a 10-year oil development partnership with American companies. The long-range program includes exploration in very difficult terrain in the Sierra Montana region. Story below.

Penn Grade Association—D. T. Ring was named president of the Pennsylvania Grade Crude Oil Association in annual convention at Pittsburgh. Page 11.

American Companies to Launch Tough Exploration Program in Eastern Peru

The American petroleum industry is preparing to launch in eastern Peru the most difficult and longest-range program in the history of its foreign operations, it has been disclosed with the return of Arthur Curtice of Hoover, Curtice and Ruby, Inc., from Lima where he has been engaged the last eight months in drafting new Peruvian petroleum legislation. The new law, expected to become effective about October of this year, will provide the working basis by which Peru and the American oil industry will embark on a 10-year development partnership at a total cost of around $200 million.

The program will center in the Sierra Montana region, described by Curtice as "the toughest area in which the industry has ever attempted to operate. It consists of 50 million hectares (123,550,000 acres) of low-altitude, tropical jungles, traversed by many sluggish rivers, mainly inaccessible except by air."

The program, in the opinion of top industry officials, reflects the rapidly changing attitude of the industry toward the whole character of its foreign operations, stressing the necessity for far-ahead planning as a guarantee of adequate sources of oil in the Americas and for national and hemispheric security in the event of future international conflicts.

Only road through the region now is one from Lima to Pucalpa on the Ucayali River, and only three airports exist capable of handling large planes. The area is east of two high ranges of the Andes and the industry must "start from scratch" in the establishment of communication and transportation systems. Some companies plan to build airfields and fly in all equipment.

At present Standard Oil Company (New Jersey), Shell, Socony-Vacuum and Gulf plan to participate in the new Peruvian program. Several companies now have geological parties in the field.

The program eventually calls for a pipe line through Jaen Pass, 2100 meters (6888 feet), lowest crossing of the Andes to the Pacific coast. The line, which will not be built for several years, will cost about $35 million. The Peruvian production is designed to serve those markets now being supplied from California, and ultimately Peruvian oil is expected to be distributed all along the west coast of South America.

Large Concessions

Commenting on the project, Curtice said:

"In view of the inaccessibility of the Sierra Montana region and the great cost of developing there, concessions of large extent will be granted, and the terms on which the industry must operate will have to allow the sale of petroleum from east Peru in the highly competitive markets which will exist in the future. Provisions of the new legislation have been based in a technical and economic study of the international petroleum situation."

When the Peruvian Congress reconvenes July 28 one of the first acts is expected to be final approval of the Sechura Desert contract with International Petroleum Company. The concession passed the Peruvian House at its last session but adjournment prevented Senate action.

Krug Objects to Terms of Public Lands Leasing Bill

Declaring the provisions of the Hatch-O'Mahoney bill for development of the public lands, calling for a flat 12½ percent royalty on newly discovered production, "indefensible and unjustifiable" where extended to all wells bringing in oil on a new structure, Secretary of the Interior J. A. Krug last week told the House Public Lands Committee that the proposal would cost the government "millions of dollars" in lost royalties.

Krug made his views known in a letter which was read at the opening of what was designed to be a final meeting at which the bill would be favorably reported.

The Secretary charged that the royalty provisions were "obviously designed to benefit special interests," and urged strongly that the 12½ percent royalty rate be limited to production from wells bringing in oil from previously unproven structures.

Under the bill as passed by the Senate, Krug said, the department would be required to define the known productive limits of deposits in known geologic structures, and would destroy the concept that lands regarded as favora-

ble should be leased for the highest obtainable royalties.

Krug cited the asserted losses in several fields under the bill, including $2 million in the Rangeley field, $1 million in New Mexico and other public land states and $1 million in the Elk Hills Basin. He took the position that the 12½ percent rate in the O'Mahoney bill passed in 1942 for new discoveries has proven "a sufficient incentive to bona fide operators to risk their capital, and urged that in the new legislation that rate be limited to wells developing new fields or deposits.

Kurg also objected to provisions of the bill calling for the 12½ percent rate on future non-competitive leases on unknown structures, declaring that only those who discover or contribute to the discovery of oil should be entitled to that royalty.

The department raised another objection, dealing with acreage limitations, pointing out that while an individual is limited to 15,360 acres there is nothing in the bill to prevent two or more individuals associating themselves and under common ownership, hold leases of the maximum acreage multiplied by the number of individuals in the group.

Seeks Michigan Storage

Michigan Gas Storage Company has applied to the federal power commission to acquire facilities in Michigan from Consumers Power Company at a cost of $3,708,000 and to make other acquisitions and construct new facilities at a cost of $4,850,000, which will enable it to engage in the business, for which it is newly formed, of acquiring, storing and selling gas in the state.

The company, a subsidiary of Consumers Power, plans to drill approximately 60 wells in the Winter field and Cranberry Lake gas field which are to be converted to storage of gas purchased from Panhandle Eastern Pipe Line Company.

Mexican Crude En Route

A tanker carrying approximately 100,000 barrels of Mexican crude oil is expected to reach Eastern States Petroleum Company's plant on the Houston ship channel in the early part of July.

The oil was produced in the Panuco field in the Tampico area of Mexico. It is a heavy asphaltic type crude, about 14-gravity.

This will be the first shipment of Mexican crude received by Eastern States since about March, 1943. Before the war some crude from the Poza Rica field, was shipped to Eastern States.

Aircraft Use

A fleet of seven airplanes, to be used in conducting widespread operations by the Standard Oil Company of Indiana, is being assembled, with three planes already in use, and four more on delivery.

Two of Standard's subsidiaries, the Stanolind Oil & Gas Company, and the Stanolind Pipe Line Company, each has its own aerial fleet.

Release of Oil From Price Control Seen as Conferees Agree on Bill

A last-minute concession by Senate conferees on the price control extension bill last week eliminated the Moore amendment for immediate de-control of petroleum and products, but early release was nevertheless insured under other sections of the measure.

One feature of the bill as drafted by the conference committee was a provision continuing the payment of subsidies to April 1, 1947, and stipulating that the stripper-well subsidy may continue to be paid to that date even though maximum prices are removed earlier.

Broadly, the price control act is to continue in effect until June 30, 1947, and the President next year is called upon to make two reports to Congress: One not later than January 15, recommending such legislation as may be needed to establish monetary, fiscal and other policies to supplement price and wage control during the balance of the fiscal year and to insure that general control of prices and wages can be terminated by next June 30 without danger of inflation, and another, by April 1, listing such commodities as are in such critically short supply as to necessitate the continuance of controls after June 30.

Wages Affected

Although the provision for mandatory de-control was washed out, early release of petroleum and products from wage restrictions is seen inherent under provisions of the bill. Maximum prices on all commodities not important in relation to business costs or living costs are to be removed before December 31, next, and on all other nonagricultural commodities maximum prices are to be promptly removed whenever supply exceeds or is in approximate balance with demand. Where there is disagreement between the price administrator and an industry, as has been the case with respect to oil, the industry advisory committee may petition the administrator for decontrol and, if he acts adversely, may appeal to an independent Price Decontrol Board which may order the removal of price ceilings.

Supply Governs

It is expressly provided that the administrator, with the advance consent in writing of the Price Decontrol Board, may re-establish maximum prices for a commodity which has been decontrolled, if the supply of such commodity is no longer consistent with the applicable de-control standard.

As passed by the House, the bill provided $50 million for the stripper well subsidy. The Senate bill did not earmark any sum specifically for oil, but provided $969 million for that and other subsidies which was cut to $869 million by the conferees.

In dealing with price control on manufactured products, the committee provided for recognition of increases in cost of production which have occurred since maximum prices were fixed on the basis of 1941, and for insuring a profit on manufacturers' and distributors' operations, including retailers.

The OPA on Friday, as the price control bill was in the final stages of debate in the senate, lifted price controls on 22 minor petroleum products such as penetrating oil, upper cylinder lubricant, and the like.

House Group Approves Royalty Oil Sale Bill

The House Public Lands Committee last week favorably reported legislation to assist small refiners who have no adequate supply of crude oil by permitting the Secretary of the Interior to sell government royalty oil to them at not less than the market price.

The bill, already passed by the Senate, was modified by the committee to permit the Secretary to prorate the royalty oil among refiners in the area in which it is produced where there is more than one refiner seeking it. The department had sought to have the bill amended to give the Secretary the authority to set up regulations for the distribution of the oil because it is limited in amount and widely distributed in the public-land states and many refineries would be elegible to assert a preference.

The committee, however, felt, and the department finally agreed, that the provision for the prorating of supplies would be adequate to meet the situation where several refiners sought oil.

THE OIL MAN'S CALENDAR

AUG. 8–9–10	Interstate Oil Compact Commission, Quarterly Meeting, Grand Rapids, Michigan, Pantlind Hotel.
Sept. 16–18	AIME World Conference on Mineral Resources, New York, Waldorf-Astoria Hotel.
OCT. 1– 2	American Association of Oilwell Drilling Contractors, Annual Meeting, San Antonio, Plaza Hotel.
3– 5	AIME, Petroleum Division, Annual Meeting, Galveston, Hotel Galvez.
7–12	American Gas Association, Annual Convention, Atlantic City, N.J.
16–18	Texas Mid-Continent Oil and Gas Association, Houston, Rice Hotel.
24–25	AIME, Petroleum Division, Annual Meeting, Los Angeles, Ambassador Hotel.
28–30	Independent Petroleum Association of America, Annual Meeting, Fort Worth.
NOV. 11–14	American Petroleum Institute, Annual Meeting, Chicago, Stevens Hotel.
21–23	Rocky Mountain Oil and Gas Association, Annual Meeting, Denver, Shirley-Savoy Hotel.

Production Problems Discussed at 22nd Annual Penn Grade Gathering

One hundred and thirty-five oil men last week attended the 22nd annual meeting of the Pennsylvania Grade Crude Oil Association held at Pittsburgh.

D. T. Ring of Columbus, Ohio, was elected president of the association at a directors meeting which followed the membership gathering. Other officers named were B. T. Haskins, Ebenezer Oil Company, Wellsville, N. Y., first vice president; G. J. Hanks, president, South Penn Oil Company, Bradford, Penn., second vice president; Samuel Messer, Quaker State Oil Refining Corp., Oil City, treasurer; W. R. Reitz, Quaker State Oil Refining Corp., Oil City, assistant treasurer; C. L. Suhr, The Pennzoil Company, Oil City, assistant treasurer; Fayette B. Dow, Washington, D. C., vice president and general counsel; and W. C. Wenzel, Oil City, executive manager.

Featured were addresses on various aspects of production and one by G. H. Sheldon, president of Sheldon, Quick & McElroy, Inc., of New York on "The Significance of Advertising to the Pennsylvania Grade Oil Industry," wherein the association was urged to continue its compaign which has been so successful in the past. "Advertising, like selling, is a job that is never finished and cannot be eased up; advertising is merely a means of selling to a market and a market is people," he declared.

Abstracts of some of the other papers presented follow:

Unitization of Oil Pools for Secondary Recovery Developments

By W. A. HEATH,
Phillips Petroleum Company,
Bartlesville, Okla.

One of the first major unitized operations in the U. S. was effected in 1926 for the sole purpose of secondary recovery development. This was the Delaware Extension Pool of Nowata County, Oklahoma. A new company was formed by the lease owners who accepted stock in proportion to the daily productivity capacity of the respective leases. A central repressuring plant was built, and the venture has been highly successful. Later, eleven unitized projects were organized for the Bartlesville "shoestring" sand pools in Greenwood County, Kansas. Through water and gas injection, the combined production has increased from 650 barrels daily to 4800 barrels daily. Equities were determined by accumulated production, number of wells, and current daily production.

There are numerous methods for determining percentage participation in a working interest unit, but no universal formulae can be established. The more common suggested factors are oil-in-place, recoverable-oil content, accumulated oil production, acre-feet of pay sand, productive acreage, number of wells, and current daily production.

Equity factors for royalty owners are best determined on a current daily production basis, since the royalty owners are not versed in production problems. Nine secondary recovery projects in Greenwood County, Kansas, have either partial or complete royalty unitization, based on current production factors. Such equities agree closely with the working interest equities calculated on the three-factor basis. After partnership interests have been established, titles are exchanged, examined, and requirements satisfied, if necessary. Unitization is then accomplished by assignments of leases by each party to the other parties to the end that each of the participants will be vested with an undivided interest in all the leases and equipment thereon in the unitized area. The Arkansas General Assembly authorized the establishment of units for the development of pools in the interest of conservation. Louisiana has issued orders to make unitization effective in distillate reservoirs of the Cotton Valley and Erath Fields upon petition of owners of a major portion of the working and royalty interests. Oklahoma's unitization law, passed in April, 1945, is a far reaching step in advancing conservation practices.

The Role of Bacteria in Crude Oil Production

By J. V. BECK,
Microbiologist, Pennsylvania
Grade Crude Oil Association.

Bacteria are small, unicellular organisms which are of importance because of their ability to increase in numbers rapidly and because they can grow in very diverse environments. Their activities are shown to be increasingly more significant in petroleum production.

Sulfate-reducing bacteria which are responsible for formation of black sludge in water lines and input wells have been found in many fresh well waters and in most produced waters of the Bradford field which have been analyzed. Many other types of bacteria have been demonstrated in input water and in backwash from input wells. These bacteria cause considerable plugging of the sand face of input wells.

The role of bacteria in pipe line and well tubing corrosion may also be of greater importance than realized. The possibility of corrosion under anaerobic conditions due to activity of sulfate-reducing bacteria should be considered.

Investigation of the activities of specific bacterial cultures in removal of paraffin from producing wells and oil lines is also part of the Association's research program.

Increasing Water Intake Rates by Acidization

By R. J. PFISTER,
Head of Secondary Recovery Research
Laboratory, Pennsylvania Grade Crude
Oil Association.

Nine Bradford water input wells have been experimentally acidized by the Association's research staff with hydrochloric (HCl) and hydrofluoric (HF) acids in six different localities. All but one have shown increases in intake rates from 50 to 300 percent. Preliminary data on oil production indicate favorable results are being obtained. The method of acidization involves running a macaroni string of 1" or ¾-inch pipe with or without jets to clean the sand face of any material which can be loosened with high pressure water. A christmas tree arrangement is used to jet high pressure water either down the macaroni string or down the regular tubing with vents on either line. The acidization experiment involves running in about 72 gallons of 30 percent inhibited HCl with 160 cc. of wetting agent. If only one treatment is desired 100 pounds of 50 percent HF are added in two slugs between the 24th and 36th gallons of HCl. The acid is pumped into the macaroni string with the aid of a small centrifugal pump. Great care must be taken to avoid the slightest personal contact with the HF. The acid is forced in to the formation by metering in the right amount of high pressure water. The pressure and shut-in schedule for the next 24 to 72 hours and well wash-out time depends on the suspected condition of the well and anticipated future acidization experiments. The methods are aimed to clean the sand face and to open up the sands of low intake rates. Future data on water input profiles and oil production will determine to what extent this goal is achieved.

Progress on Selective Plugging Studies By Chemical Methods

By H. C. LAWTON,
Research Associate, Pennsylvania
Grade Crude Oil Association.

Several advantages are to be gained from selective plugging of sands in sec-

New President

D. T. Ring of Columbus, Ohio, elected president of the Pennsylvania Grade Crude Oil Association at its convention last week in Pittsburgh, has been a director of the association for seven years and its second vice president for five years. He is vice president in charge of oil production for Preston Oil Company of Ohio, Union Gasoline and Oil Corporation of Pennsylvania and West Virginia, and Virginian Gasoline and Oil Company of Kentucky and West Virginia. Previously, from 1915 to 1925, he was associated with Humphries Oil and F. Julius Fohs in the Mid-Continent and Texas areas, and from 1927 to 1939 with the Ohio Fuel Gas Company.

D. T. Ring

ondary recovery operations. Among these advantages are, 1) decreased bypassing of water and gas through thief sands, 2) lowered pumping costs both input and production, 3) increased input into the less permeable sands with resultant increased rate of oil recovery, 4) saving costs of long strings of casing in cable tool drilling wells, 5) the advantages gained from larger holes drilled into production or input horizon and, 6) the advantage gained from preventing drowning of gas wells during drilling operations by water entering from stray water sands.

The preparation, properties and composition of applicable silica gel-forming solutions and urea-formaldehyde resin-forming solutions are presented.

The results of ten experimental field treatments with these chemical plugging agents are discussed. Three of the treatments are presented in detail. Experience gained in carrying out the plugging treatments conclusively show the importance of having equipment in good mechanical condition and of having the hole in the best physical condition.

Results to date indicate that chemical plugging agents can be used in water, oil and gas wells throughout the entire Pennsylvania Grade Area to control excessive flow of water into cable tool drilling wells, to seal off thief sands in both water and gas input wells, and to control water-oil and oil-gas ratios in producing wells.

Other Talks

In addition to these papers, H. A. Pray of Battelle Memorial Institute, Columbus, Ohio, analyzed the problem of corrosion of oil well equipment in the air-gas drive operations centered about Oil City. Studies made, he said, point to possible successful use of prevention methods.

Highlights in Pennsylvania's oil history were described by Dr. Paul H. Giddens, curator of Drake Well Park, Titusville, and J. Paul Jones of Bradford, association director of production, reported on current problems.

Principal speaker at the dinner was E. W. Yorke, Jr., of DuBois, Pa., former member of the U. S. military mission to Moscow, who gave an off-the-record talk on Russia.

Wyoming Map Issued By Geological Survey

Oil and gas possibilities of the Bargee area in Fremont County, Wyoming, are shown on a new map just issued by the U. S. Geological Survey indicating that the tightly folded anticline may contain oil and gas in commercial quantities in the Tensleep sandstone or the dolomites of the overlying Phosphoria formation.

Covering an area of about 55 square miles including the Bargee and Blacktail anticlines, the map shows the distribution of Triassic, Jurassic and Cretaceous rocks along the southern flank of the Owl Creek Mountains.

Copies of the map—Preliminary Map 56 of the Oil and Gas Investigation Series—may be purchased at 40 cents each from the Survey in Washington, Casper, Wyo.; Denver or Tulsa.

Continental Shelf Exploration Plan

Preliminary study of the cost and methods of exploring the possible oil reserves of the Continental Shelf are being made in the Interior Department, and the matter of the appropriation required has been taken up with the Budget Bureau, Secretary J. A. Krug revealed last week.

Krug said, however, that no definite amount of money has yet been decided upon. The funds will be sought through a deficiency appropriation, but in view of the fact that Congress will adjourn this month it is probable they will not be asked until next winter.

Signal Hill Observing Its Silver Anniversary

June 25 will mark the 25th anniversary of Signal Hill oil field at Long Beach, Calif. Shell Oil Company's discovery well, Alamitos 1, was brought in on that date in 1921 and the field later proved to be a rich one.

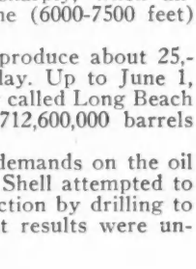
A new deeper zone was discovered in early 1923. In that year the field reached its production peak of 69 million barrels. By 1927 both drilling and production had fallen off sharply, when another and deeper zone (6000-7500 feet) was discovered.

Today, 1135 wells produce about 25,000 barrels of oil a day. Up to June 1, 1946, Signal Hill, now called Long Beach field, had produced 712,600,000 barrels of crude.

In 1945, with war demands on the oil industry at the peak, Shell attempted to develop deeper production by drilling to almost 15,000 feet but results were unfavorable.

Howsley Appointed Counsel By Mid-Continent Group

Andrew M. Howsley of Albany, Texas, has been appointed general counsel of the Texas Mid-Continent Oil & Gas Association, Fred W. Shield, president, has announced.



A. M. Howsley

Howsley, attorney and independent oil operator in the stripper well area of West Central, Texas, will serve as general counsel and also supervise the association's office. He is well known in oil circles, having long been active in the Texas Mid-Continent Oil & Gas Association.

The association will continue to carry on and expand its research and other services for Texas oil and gas operators, Shield said.

Scrap Shortage Delivers Another Blow to Steel

The jittery steel industry, rocked in turn by steel, coal and railroad strikes, faced a new crisis this week in the shape of one of the most serious shortages of scrap since a similar stringency in 1942-43 necessitated national scrap drives. As to a new scrap-collection drive, there is little chance of much improvement in the situation until manufacturing operations among steel consumers reach a much higher rate and the volume of waste metal begins to mount.

Steel last week marked an advance of 2½ points in its operating rate to reach 88.5 percent of rated capacity, but while optimistic elements in the industry predict the acceleration of operations will continue, pessimistic quarters believe that the scrap shortage will not only prevent further gains in output but may cause an actual decline.

Meanwhile, other segments of the metals industry were pressing home the fact that shortages of lead, tin, copper and zinc are world-wide in scope and likely to continue indefinitely or at least until exploration reveals significent new deposits.

Petroleum Industry Probe House Group Possibility

Possibilities that an investigation of monopoly just initiated by the House Small Business Committee may extend into the marketing of petroleum were raised last week by Chairman Wright Patman of Texas, who reported that marketing practices have been the subject of many complaints reaching his monopoly subcommittee.

"The growing tendency of large integrated manufacturers to extend their control clear through to the consumer," he described as a serious problem.

Patman also declared that unless remedial steps are taken the peacetime benefits of the government expenditures on industrial research during the war will accrue to the large manufacturers who monopolize the prime contracts, and smaller manufacturers of technical products will be left far behind for lack of this data.

Similarly, he charged, WPB's premature dropping of wartime controls while serious shortages of materials and components still existed has worked to the disadvantage of small business.

Southern Union Gas Disposing Of Oil Holdings in Southwest

Southern Union Gas Company, Chicago, which operates extensive natural gas production, transmission and distribution facilities in the Southwest, is disposing of its oil holdings and offering its common stockholders right to purchase the common shares of its oil-producing subsidiary, Delhi Oil Corporation, formerly Southern Union Development Company.

Delhi took over Southern Union's Louisiana oil properties and later acquired the 16 wells and New Mexico leases owned by the company.

Krug Seeks Industry Views on Oil Problems as First Council Adjourns

Secretary of the Interior J. A. Krug last week appeared vague as to the industry's position on such matters as reserves, synthetic fuels development and imports, and named those subjects as among the matters on which the new National Petroleum Council will be asked to give its advice.

Commenting on the initial meeting of the council, Krug expressed the opinion that there was a good turn-out of members in view of the short notice given them, and said that those attending give their "firm assurance of support and I think we will make some real headway if we can only continue the cooperation we had with them during the war."

Krug said no decision has been reached as to making the council meetings open to the press and to non-member oil men, but indicated his preference would be for closed-door sessions because "we found during the war that advisory committees work faster if they can express their views without having a lot of people around to misinterpret them."

A major problem to come before the council, he said, is what our reserves are and what we ought to be doing about the future of our requirements, involving imports, synthetics, etc. In the past, he explained, he has had the views of industry men against the department's synthetic fuels program and also questioning its figures on reserves.

"It will be very helpful if we can get some concensus from the group representing industry and the group representing government" on those and other points, he said.

OGD Appropriation Cut By Conference Committee

The new Oil and Gas Division of the Interior Department will have a fund of $400,000 on which to operate during the next twelve months, instead of the $472,000 originally asked. The amount of the fund was fixed by the House as it passed on the work of the conferees on the Interior Department supply bill.

The Bureau of Mines will get $5,250,000 for its synthetic liquid fuel program; for oil and gas investigations the Bureau will get $826,750, and for helium investigations it will receive $100,000.

The OGD fund was asked after the bill had been passed by the House, and the Senate inserted an amendment giving it $449,516, which included $216,908 provided for operation of the Petroleum Conservation Division, now part of the new agency. The House conferees agreed to finance the division, but Representative Jed Johnson of Oklahoma, chairman of the appropriations subcommittee in charge of Interior funds and ranking House member on the conference committee, insisted that the amount be cut to $400,000.

Lead Supply Continues Tight Despite Imports

The lead situation continues tight despite plans to import approximately 8700 tons this month as compared with an estimated 6000 tons in June, and total supply will be only about 50 percent of domestic demand.

Domestic production is currently running at a rate of 350,000 tons for the year, compared with 387,000 tons actually produced in 1945, CPA has reported. July demands presented by lead consumers called for 70,000 tons, but it is believed that some of these requirements were excessive.

To maintain an even flow of the metal to consumers, 6000 tons will be "borrowed" from the government stock, now estimated at around 38,000 tons compared with 100,000 tons at the beginning of the year, to be replaced from imports later in the month.

For July, it is expected 4000 tons will be allocated for tetraethyl lead production, 160 tons under the 4160 tons provided in June.

Louisiana Lease Sale

The State Board of Louisiana has announced that $529,355, plus royalties, was realized from the sale of eight tracts of state land, consisting of approximately 25,000 acres, part of which were submerged lands in Timbalier Bay in Terrebonne and Lafourche parishes. The highest single bid was $333,000, made by the Shell Oil Company for 2982 acres in the Shark Island area. Stanolind Oil & Gas Company leased four tracts in Timbalier Bay, 20,000 acres, for $170,000.

Thinks Supreme Court Should Rule on Tidelands

Secretary of the Interior J. A. Krug last week picked up the tidelands torch from his predecessor, Harold L. Ickes, telling a news conference that "if the federal government owns title (to the tidelands) it should hang on to it."

"I am not in favor of the tidelands bill now pending in the Senate," he said. "I feel very strongly that the present case in the Supreme Court should determine the government's interest. If the court decides the government does own the lands, then Congress can take whatever action they want to give them away. If the federal government as such owns them legally, I will fight for them to the last ditch."

In Congress, Senator Pat McCarran of Nevada promised to make an effort to bring the resolution up for consideration by the Senate before adjournment, and Senator Homer E. Capehart of Indiana introduced an amendment June 25 striking out the provision that the tidelands extend to the state boundary line where it is more than three miles out and substituting the boundary line as it existed at the time of the admission of a state into the union, giving due recognition to any subsequent changes in the coast line occasioned by reason of fill-in or natural accretion.

Anglo-American Oil Pact Consideration Postponed Probably Until Next Year

Senate ratification of the Anglo-American petroleum agreement appears definitely off until next year.

With possibly only three weeks of the Congressional session remaining, and with Senator Tom Connally, chairman of the Foreign Relations Committee, still in Europe, little chance is seen for the lengthy hearings and probably equally lengthy debate.

Whether postponement is good or bad appears to be a matter of opinion in Washington. State Department officials take the position that while it is desirable to have the agreement consummated as soon as possible, nothing will be lost by postponement. In other quarters the suggestion is made that the treaty should have been put through long ago, while Congress was in a cooperative mood internationally, and that it will have hard sledding when it comes up next winter when and if sentiment for "one world" cools off.

In one respect, delay will be to the good. There has been some criticism in Texas of Connally's pre-occupation with international affairs which was one reason for Secretary of State Byrnes' insistent letter to Connally urging him to go to the Paris meeting of foreign ministers. That criticism has not reached the point where it will hurt Connally's chance of re-election, but is likely to pile up, and a cooling off period may be advantageous.

As a matter of fact, there appears to be little interest in the pact in the Senate, but any mention of Britain is enough to touch off debate and it may be necessary for the administration to exert considerable pressure to get it through when it does come up.

Louisiana Allowable

In an order for July, the Louisiana Conservation Commission increased the state oil production allowable to 428,641 barrels daily, an increase of 10,827 barrels over the previous high of 417,814 barrels daily for the past June. District totals were reported as Houma, 63,256; Lafayette, 117,568; Lake Charles, 66,127; New Orleans, 89,602; Monroe, 55,487; and Shreveport, 36,601 barrels.

API Directors Indicate Program of Great Expansion in Next Few Years

By WELDON B. HILL, Staff Writer

A stepped-up postwar expansion program, including a broader membership plan, was adopted by the board of directors of the American Petroleum Institute at their annual mid-year meeting in Dallas last week.

The expansion program calls for the establishment of additional chapters in the production division, continuation of the public opinion survey, and widening of the Institute's comprehensive program of agricultural research.

The directors, in a move to expand the board's membership, voted to invite presidents of 20 oil trade associations to become ex-officio members.

The move was made through the adoption of a resolution presented by the Committee on Postwar Activities and By-Law Revision. The resolution approved sending invitations to 16 trade associations whose presidents served ex-officio as members of the Petroleum Industry War Council. To these 16, the committee added seven others including "three of the state associations of petroleum marketers as may be nominated by the governing body of the National Council of Independent Petroleum Associations from among the 25 or more state associations, provided that no one of such associations shall be nominated consecutively more than twice."

The directors further voted to amend by-laws to prevent any future vice president from holding office more than two years.

New Chapters Designated

The directors also took action to increase the production division chapters from 14 to 20, of which 8, including 3 new ones, will be in Texas. The new chapters will be located at New Orleans, Corpus Christi, San Antonio, Midland, Texas, Lake Charles, La., and Jackson, Miss.

Regional vice chairmen, division of production, were also named. They are Dave Frame, Humble Oil & Refining Company, Houston, Southwest District; C. P. Dimit, Phillips Petroleum Company, Bartlesville, Oklahoma, Mid-Continent Division; D. T. Ring, Preston Oil Company, Columbus, Ohio, Eastern Division, and A. C. Rubel, Union Oil Company of California, Los Angeles, California Division.

L. T. Potter, Lone Star Gas Company, Dallas, was named secretary of the production division.

At a meeting of the production division on June 24, C. A. Young, API Director of Production, said that 497 manufacturers of oil field equipment now use API specifications, representing 90 percent of the equipment in use and a saving to the industry of more than $15 million annually. There are about 2500 subscribers to API specifications, Young said.

George A. Hill Jr. of Houston, vice president of production, presided at the division's session.

Agricultural Aid

The API agricultural program is designed to link more closely two of the nation's largest industries — agriculture and petroleum.

API wants to stimulate and originate research which will aid in solving agricultural problems that often bring setbacks to farming.

The American petroleum industry, therefore, will conduct nationwide research as to the extent of raw materials of the farm now entering into petroleum refining and petroleum by-products.

It is the plan of API for its committee on agriculture to work with government agencies and farm organizations.

"The rapid growth of farm mechanization," W. R. Boyd Jr., API president, who presided at the meeting, said, "has made agriculture an important customer of the petroleum industry. It is only natural for us to help that customer remain prosperous and to assist him in efficient operation.

"Farmers now use more than 3½ billion gallons of petroleum products annually, and the total is expected to increase. On its part, the petroleum industry uses directly more than 40 million pounds of farm products," Boyd said.

Public Relations Problem

In approving the continuance of the public opinion survey, the directors cited that the entire public relations scheme will be among the foremost subjects at the annual meeting in Chicago, November 11-15. At that time public relations specialists will be heard. One day of the annual meeting will be devoted to the subject.

A memorial resolution on the death of E. L. Smith, Dallas oil man and API director, who was stricken on the night of June 24, was adopted and the final session of the meeting was curtailed in order that directors could attend funeral services.

The next meeting of the directors will be held in Washington, D. C., at a date to be named by President Boyd.

Alien Custodian Offers Leases in Kern County

The Alien Property Custodian's office in San Francisco is inviting bids, to be opened July 23, for leases to drill for, produce and dispose of all oil and gas deposits owned by the custodian in lands in Kern County, California, seized during the war from enemy-aliens.

Full information and bid and lease forms may be secured from the San Francisco office.

California Standard Takes Over Areas for Operation

Operation of two oil field producing properties in Santa Barbara County, known as the Magenheimer and Tognazzini leases in the Gato Ridge field, will be assumed by Standard Oil Company of California July 1. The leases have previously been operated by The Petrol Corporation.

Petrol's interest in the leases was acquired by Standard of California in 1941. At about the same time Standard intensified its exploration and drilling program on its other properties in order to meet war requirements, and because this program demanded the company's maximum facilities The Petrol Corporation agreed to continue operation of the properties until now.

The two properties to be taken over at this time by Standard of California cover approximately 600 acres, with 12 wells currently producing 1300 barrels daily.

Standard announced that it has no interest in The Petrol Corporation nor any other Petrol properties or facilities.

Texas Independents Open Headquarters in Austin

Announcement of the opening in Austin (Suite 222, Driskill Hotel) of the permanent headquarters of the Texas Independent Producers and Royalty Owners Association, the first organization of its kind in Texas to take in both producers and royalty owners, was made last week by H. J. Porter, Houston, president. E. I. (Tommy) Thompson, Houston, executive vice president, will be in charge. A monthly meeting of the officials and the executive committee of 13 members will be held in Austin the night before each statewide hearing of the State Railroad Commission.

Membership drives are underway in the state's 12 railroad commission districts under the direction of the association's district vice president.

Corrosion Study

Corrosion of metals, cause of one of the world's greatest economic losses and estimated at approximately $175,000,000 annually in the refinery and pipe line industry alone, will be studied in a coordinated program of instruction and research at the Massachusetts Institute of Technology. Dr. Herbert H. Uhlig who has been appointed an associate professor in the department of metallurgy to take charge of the project has published a number of papers on corrosion and allied problems, and is editor-in-chief of "The Corrosion Handbook" to be published shortly.

Indian Lands Offered

Sealed bids for oil and gas leases on restricted allotted Indian lands will be open at the Kiowa Indian Agency at Anadarko, Oklahoma, until July 17. A total of 15,995.96 acres will be offered, including tracts in Caddo, Comanche, Cotton, Kiowa and Tillman counties.

Natural Gas Limitation Only Solution Offered by Competitors Before FPC

Effects of the expansion of the natural gas industry upon employment in other industries were explored last week by the Federal Power Commission, but representatives of the coke, coal and railroad industries who testified in the natural gas investigation appeared unable to offer any solution to the problem other than limitation upon the field of natural gas.

The Commission devoted the entire week to this phase of its investigation. Representatives of the coke and coal industries, with which natural gas comes into direct competition, argued that where gas came in, their markets went out, with consequent unemployment, loss of taxable value in plants and curtailment of coke supplies, important to the steel and other industries. The railroads are contending that the expansion of gas service cuts the volume of coal to be hauled, also creates unemployment, and jeopardizes the ability of the roads to render needed service in times of national emergency.

Although he admitted natural gas service will extend to the more accessible area of the country, Alfred R. Powell, director of research for The Koppers Company, expressed the opinion that in the Northeast, bituminous coal and heavy fuel oil will continue as the raw materials for the manufacture of gas.

Coke Industry Affected

The effect of natural gas competition upon the merchant coke industry was developed by William H. Earle, president of Philadelphia Coke Company, who testified that the number of coke plants declined from 37 to 31 between 1929 and 1945 and declared that 6 plants went out of production because of the introduction of natural gas into their market territory. Three other plants are about to go out of operation, he said, and the total loss to the coal industry will be some 1,380,000 tons a year.

With the entire East on the threshold of natural gas, Earle said, the entire industry, which uses 12 million tons of coal annually, is threatened.

The merchant by-product coke industry is definitely a gas industry and requires markets for its gas to exist, it was explained by W. R. Morris, vice president of The Koppers Company, but it was brought out by Edmund O. Rhodes, manager of the technical development department of the same company, that the industry competes directly with petroleum and natural gas and with agricultural products in turning out raw materials for the organic chemical industry.

For instance, he said, 45.4 percent of chemical intermediates come from coal, against 27.3 percent from petroleum and natural gas; 58.6 percent of flavors and perfumes against 17.4 percent, 65.8 percent of plastics and resins against 17.1 percent, and 76.4 percent of rubber chemicals against 20.6 percent. Coal also produces 100 percent of dyes and colors and 92.8 percent of medicinals, he testified.

More Dumping Charged

Although the coke industry representatives stressed the effect of the introduction of natural gas upon their operations, it was brought out in cross-examination that some of the coke plants were installed in areas in which natural gas already was being distributed. Questioning also developed that while Koppers Company witnesses criticized the "uncontrolled dumping" of which they said the natural gas industry had been guilty, gas manufacturers also have "dumped" their product on occasions.

Figures laid before the Commission showed that whereas in 1929 the by-product coke ovens supplied 142 million mcf. of the 382 million mcf of manufactured gas produced and purchased by utilities, their share had dropped in 1944 to 169 million mfc. out of a total of 509 million mcf.

As an argument against further incursions of natural gas into competitive fields it was contended that eventually gas supplies will be exhausted and it will be necessary to return to coal.

"However great the natural gas reserves may be, no one has asserted that they are limitless," Earle declared. "No one claims they are replaceable. The faster the rate of consumption, the closer the date of exhaustion.

"Pipe lines of great length spanning rivers and highways and mountains are not invulnerable. Without attempting to cite specific instances, gas fields have been exhausted, pipe lines have failed; it requires no great stretch of imagination to believe it can happen again.

"What happens with the eventual and inevitable disappearance of the supply of natural gas?"

The problems of the coal industry will be further examined by the Commission this week during hearings which will be abbreviated because of the holiday.

Crude Oil Production in the United States

(Estimates compiled by THE OIL WEEKLY. All figures indicate daily averages in barrels.)

STATE OR DISTRICT	PRODUCTION IN WEEK ENDED June 29	June 22
Alabama	1,150	1,150
Arkansas	73,800	73,800
California	884,100	874,600
Colorado	32,000	31,500
Florida	200	250
Illinois	206,350	207,600
Indiana	19,900	19,800
Kansas	260,300	277,450
Kentucky	30,750	30,500
Louisiana	377,600	377,450
North Louisiana	81,500	81,350
South Louisiana	296,100	296,100
Michigan	47,500	49,500
Mississippi	63,800	63,350
Missouri	100	100
Montana	25,000	20,900
Nebraska	750	750
New Mexico	98,850	98,850
New York	13,500	13,500
Ohio	7,800	8,100
Oklahoma	387,100	388,500
Pennsylvania	37,000	36,500
Tennessee	35	35
Texas	2,243,750	2,243,750
Texas R. R. Comm. Districts:		
Dist. 1—S. Central	19,650	19,650
Dist. 2—Lower Gulf Coast	155,650	155,650
Dist. 3—Upper Gulf Coast	515,400	515,400
Dist. 4—S. West	229,600	229,600
Dist. 5—E. Central	43,950	43,950
Dist. 6—E. Texas Field	326,000	326,000
Dist. 6—Rest of N. East	107,350	107,350
Dist. 7-B—W. Central	32,400	32,400
Dist. 7-C—West	28,450	28,450
Dist. 8—West	566,450	566,450
Dist. 9—N. Central	132,400	132,400
Dist. 10—Panhandle	86,450	86,450
West Virginia	8,750	8,500
Wyoming	111,000	115,750
Total United States	4,931,085	4,942,185

Total stocks, foreign and domestic, June 22, as reported by the Bureau of Mines were 222,193,000 barrels with a daily average production of 4,950,000 barrels and runs to stills 4,836,000 barrels.

Oil Discovery Is Recorded For Central Alberta Plains

Imperial Oil Ltd.'s Provost 1, lsd 3 27-37-3w4th, has completed as an oil discovery from a sand at the Lower Cretaceous contact on the Central Alberta Plains. Drilling was completed at 2549 feet, with 15 feet of sand showing from 2534 feet, and 9⅝-inch casing was set at 2530 feet. The well is flowing by heads at approximately 2.5 barrels hourly, with a gas volume of 165 mcf daily. Recovery is a heavy brown oil, estimated at 21 to 22 degrees API, with a basic sediment and water cut fluctuating between 2 and 3.5 percent.

The discovery will likely be placed on pump, with prospect of production substantially better than natural flow rate. The well is in virgin territory, 25 miles from nearest previous drilling, and around 60 miles southeast of the big Viking-Kinsella gas reserve. The Provost well logged the Viking sand (source of Kinsella area gas) around 2373 feet; drill-stem tested about 1500 mfc daily.

Imperial Oil Ltd.'s Kinsella 14, lsd 7 28-45-9w4th, which recently drill-stem tested first important showing of crude oil in the Viking sand, has been abandoned after failing to effect shutoff of gas and salt water from upper member of Viking. The well, 5 miles south of current southeast limit of the Viking-Kinsella gas reserve, is being followed up by Imperial's Kinsella 18, 5 miles to its west; and Kinsella 17, 9 miles northwest of No. 18.

Mexican Walkout

Mexican petroleum workers staged a 24-hour walkout June 25 in protest against "the attitude assumed by the general manager" of Petroleos Mexicanos regarding the "leveling" of salaries for petroleum workers.

The walkout suspended pipe line pumping activities, work in the fields, distribution of combustibles, and office work over the entire nation, according to the Mexico City newspaper *Ultimas Noticias.*

Texas Company and Magnolia Confirm Report of Products Line from Gulf

Texas will get another major petroleum products carrier with confirmation by The Texas Pipe Line Company of the construction of a line that will link the Beaumont - Port Arthur refining area with the Fort Worth - Dallas region. (First reported in THE OIL WEEKLY June 3, 1946.)

The cost of the entire project is estimated at about $10 million. The line will be built by The Texas Pipe Line Company and Magnolia Pipe Line Company.

Magnolia's part of the project calls for the construction of a 12-inch carrier from Spindletop, Jefferson County, Texas, to Hearne, Texas. This line will be linked with feeder lines from refineries at Port Arthur and Beaumont.

At Hearne, The Texas Pipe Line Company extend the main line to either Fort Worth or Dallas and also to Austin and San Antonio. A 10-inch line will be built to the North Texas terminus, with a 6-inch line extending between Fort Worth and Dallas, and 8-inch line from Hearne to Austin, and a 6-inch line from Austin to San Antonio.

It is anticipated that preliminary work will be completed in a few weeks so that orders may be placed for the material and equipment, according to B. E. Hull, president of The Texas Pipe Line Company. Actual field construction will be undertaken early in 1947.

Humble Oil & Refining Company now is constructing a products line from its Baytown refinery to a point between Fort Worth and Dallas.

The next major products line likely to be confirmed is that of the Sinclair Refining Company. The company is reported making plans to lay a line from Corpus Christi northward to Austin.

TGT Given Authority To Purchase Stations

The Federal Power Commission has authorized Tennessee Gas and Transmission Company of Houston to purchase four compressor stations in Mississippi, Tennessee and Kentucky from the Reconstruction Finance Corporation at a cost of $6,607,550.

The commission also granted the company permanent authority to operate 2380 feet of 8-inch transmission line in Harris County, Texas, from the main line to a connection with the 10-inch Katy-Satsuma pipe line of the United Gas Pipe Line Company.

The four compressor stations are now operated as part of TGT's pipe line system, and additional gas reserves have been thus connected, to meet requirements for continued operation.

Payne County Survey

Johnson Oil Refining Company, Cleveland, Okla., has made a survey for the pipeline gathering system in Payne County areas, to connect to properties of T. E. Berry and Associates. Berry et al have about 700 barrels daily production, which agument supply to Johnson. The plant has been getting most of its oil in Pawnee and Osage counties.

Sale of Big Inch Electric Lines Announced by WAA

War Assets Administration has announced that the consummation of disposal activities recently included sale of two electric transmission lines erected to serve the two Big Inch pipe lines to their wartime lessees, the Arkansas-Missouri Power Corporation, which bought the line in Arkansas for $326,835, and the Missouri Utilities Company, which purchased the line in Missouri for $215,489. A provision of the sales contracts is that the new owners will continue to supply power to the pipe line pumping stations at the rate originally established for service, if called upon to do so.

Humble to Install Loops On Its West Texas Trunk

Humble Pipe Line Company has placed orders for pipe to install 84 miles of loops on its West Texas trunk line between McCamey and Kemper terminal, Reagan County, and on its combination 10-inch and 12-inch carrier that extends from Kemper to Ingleside, near Corpus Christi. The project calls for 70 miles of 12-inch and 14 miles of 10-inch welded pipe, which will not be available until early next year. These loops will increase the capacity of the Kemper-Ingleside carrier from 61,000 barrels to 75,000 barrels daily. The McCamey-Kemper sector of the system consists of three 8-inch units with two 10-inch units on the Kemper end.

The company's double 8-inch carrier, extending from Kemper terminal to Baytown, is not scheduled to be enlarged although it is exceeding its rated capacity in handling 52,000 barrels of crude daily.

Magnolia Starts Work on 37-Mile West Texas Line

Magnolia Pipe Line Company has started construction of a 37-mile 10-inch loop, parallel to two 8-inch units between Andrews station and its West Texas terminal at Midland. This project was authorized last April, and all pipe has been shipped. Latex Construction Company was awarded the contract, and has been installing highway crossings for several weeks. It is scheduled to be completed by August 1. The Andrews-Midland line is handling 54,000 barrels daily. Booster station equipment will not be available for some months to utilize the entire extra capacity to be afforded by the 10-inch unit.

Wyoming Electric Line Would Aid Oil Industry

A 63-mile transmission line costing $117,366 will be built by the Bureau of Reclamation from Seminole Dam to Casper, Wyoming, to meet increasing demands for power for oil drilling and other industrial activities in central Wyoming, it was announced last week by the Interior Department.

Power from the dam already is being distributed to oil fields and refineries, among other consumers, over some 540 miles of transmission line, the department said. The new line will be of 115-kilovolt capacity and will replace a 69-kilovolt line now used.

Sohio Completes Line

Sohio Petroleum Company has completed 25 miles of its projected 43 miles of 8-inch discharge line from the Tinsley field, Mississippi, to barge terminal on the Mississippi River at Mayersville. The field booster station is complete, and work is under way on two 80,000-barrel storage tanks at the barge terminal.

Sohio Acquires Mississippi Gathering Line from United

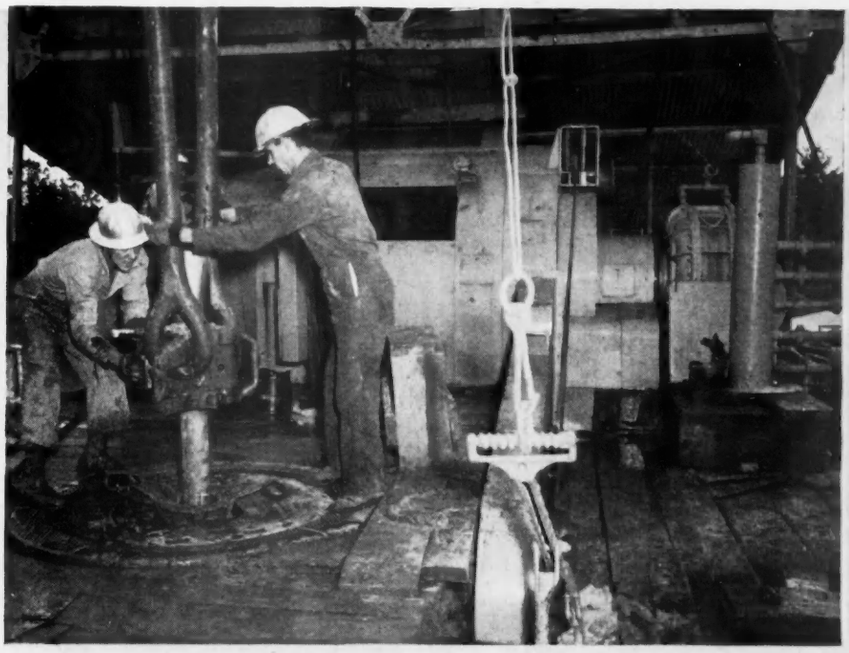
Sohio Petroleum Company has acquired United Oil Pipe Line Company's gathering system in the Tinsley field, Mississippi, with connections to 111 wells that are producing 10,500 barrels daily. This purchase increases the Sohio's total field connections to 230 wells for an average of 17,700 barrels of crude daily to support its 8-inch trunk line now nearing completion to Mississippi River barge terminal at Mayersville. Tinsley field has been dependent upon tank car shipments for an outlet, except for production processed by a nearby refinery.

Arkansas-Louisiana Gets Permit to Use L-System

The FPC has authorized the Arkansas Louisiana Gas Company to continue operation of its "L System," constructed under contract with Defense Plant Corporation to serve Arkansas war plants, and to construct additions to render additional service and remove portions of the line no longer needed. The company also was authorized to continue operation of pipe line facilities authorized for wartime use to supply gas to the Ozark Ordnance Works and the Shumaker Naval Ordnance Plant.

It was explained that as war plant operations have been curtailed, the company plans to use its "L System" to serve the Lynch Power Plant now under construction by the Arkansas Power and Light Company at Rose City; maintain adequate service to Little Rock and North Little Rock, and supply gas to the Aluminum Ore Company and two plants of the Dulin Bauxite Company. This will necessitate the construction of about 21 miles of 12¾-inch line and 4½ miles of 8⅝-inch line with two lines of the latter size crossing the Arkansas River. The new facilities are estimated to cost $530,391.

By
GORDON B.
NICHOLSON
Staff
Writer



A coring reel and assembly, with a capacity of 12,500 feet of 5/8-inch wire line, is mounted on the line shaft, with a band-type brake operated from a hand lever in the instrument panel. The draw works, transmission, and coring reel are moved as a single unit after disconnecting the chain drives.

Modern Mechanical Rig Simplifies Drilling

IN THE piney woods area of Washington Parish, Louisiana, located north of Bogalusa near the southeastern boundary of the state, Gardner Brothers Drilling Company recently assembled a rig which is equipped with many features designed to expedite drilling and relieve the driller and crew of some of the back-breaking tasks usually common to conducting such operations. Using butane gas for fuel, the new rig, now on its first test in wildcat territory, is drilling at a rapid pace and giving satisfactory overall performance.

Controls Simplified

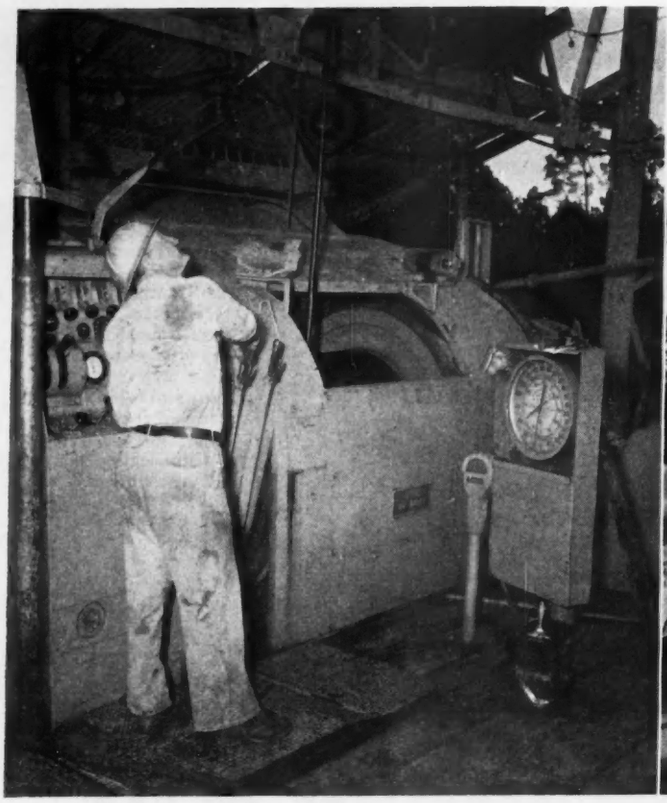
Among the features of the rig are the simplified controls located in a protected panel immediately behind the driller's position, and the unitization of equipment to facilitate rigging up and tearing down when changing locations. The instrument panel contains numerous hand levers which are manipulated by slight pressure of the fingers, some of which operate air valves for controlling all clutches including engine compounding, pump, and hydromatic brake clutches. Also located in the panel are engine throttle levers and dials and gauges indicating air pressures, transmission shaft speed, engine vacuum, and oil pressure.

Unitization is evidenced in the three engines which furnish power for the rig, mounted on skid-type sub-bases, and in the fourth element of the engine assembly comprising the compound transmission for the draw works and pump drives, which is also skid-mounted. As prime movers, Gardner Brothers uses three 350-horsepower engines equipped with six silencers to muffle the normal sound of the exhausts and so improve working conditions in the vicinity of the rig. Each engine is connected by a shaft assembly to the unitized drive in which all driving elements are straddle-mounted in self-aligning roller bearings on rigid supports. Connections of the shafts to the engines are effected through friction clutches which serve as high-speed flexible couplings. Shafts are equipped with multi-width chain drives, with spline-type clutches to provide any compounding arrangement desired. The clutches embodied in this unitized compound are independently operated by air controls from the instrument panel and give instant response to any alterations in settings. In case of emergency, the couplings on the engine shafts and the clutches to the draw works and slush pump may be operated manually.

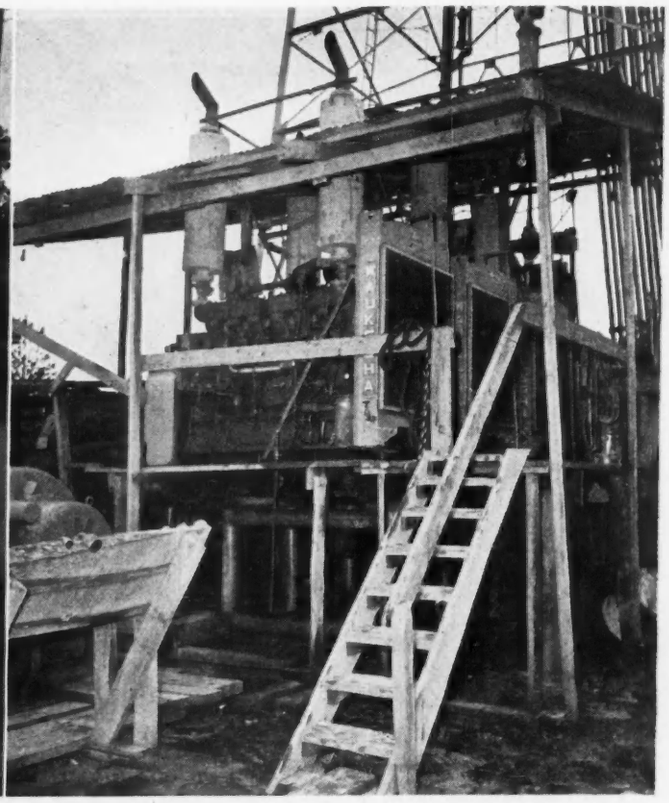
Also mounted on the compound drive assembly is a dual-type air reservoir of large capacity for maintaining air pressures in excess of requirements. The reservoir is equipped with safety valves and water traps to eliminate sluggish operations resulting from condensate in the air lines. Three compressors furnish air for the control system, the compressors operating independently of each other as each compressor is located on the sub-base of an engine assembly and is driven from a special power take-off. In this manner, air pressures are developed immediately after starting the first engine and an adequate supply is provided when only two of the three individual compressors are in operation, leaving the third compressor as a virtual standby and eliminating the need for having a separate standy compressor unit.

Dismantling Facilitated

All connections with the compound drive are designed to facilitate dismantling for moving in as few steps as possible, and all air lines are grouped and arranged compactly in such manner as to assure making the proper connections when assembling the rig. To dismantle the drive unit, the throttle controls and air and vacuum lines are disconnected by removing bolts from two flanged couplings. After this operation, and after disconnecting the chain drive from compound to draw works, the compound drive assembly is removed from its position across the engine skids. After moving away from the engines to clear



A protected instrument panel located behind the driller contains levers for manipulating air valves which operate all clutches. Other levers are for engine throttles, and dials and gauges indicate air pressures, transmission shaft speed, engine vacuum, and oil pressure.



Prime movers consist of three 350-horsepower engines which use butane for fuel. Each engine has two silencers to reduce sound of the exhausts, and is mounted on a skid-type sub-base to facilitate moving. A unitized compound transmission for the draw works and the pump drives is connected to the engines.

the clutch drums, the compound drive assembly is ready to be loaded.

The draw works is driven through a self-contained, inside-mounted transmission having three forward speeds, through sprockets and roller chain drives, and one reverse speed through single helical gears, the combination giving the draw works six forward and two reverse speeds when using the high and the low drum shaft clutches. The draw works transmission clutches are operated by air cylinders controlled by the driller, and an interlocking device prevents accidental engagement of two clutches simultaneously. Both the high and the low-speed drum shaft clutches are of the constricting type, with renewable friction shoes. High and low sprocket and clutch elements are self-contained, and may be removed from the shaft as a unit.

The draw works and transmission form a single unit as a necessary factor in maintaining alignment and proper lubrication. For moving the unit, it is necessary to remove only the drive chains from compound to draw works and from draw works to the rotary, forming a compact load assembly 21 feet 6 inches long, 9 feet 6 inches wide, and 8 feet 4 inches tall, including the core reel. By unbolting the transmission unit from the draw works frame and disconnecting the flexible couplings to the high and low-speed pack shaft, a road clearance of eight feet is obtained.

A large drum 48 inches long with a spool diameter of 28 inches reduces wrappings on the spool for a given length of line, minimizing line wear. For current operations designed for depths exceeding 10,000 feet, eight lines are used, the size of the line being 1¼ inches. The 54-inch brake flanges, made of a special heat-treated alloy steel, are water cooled to assure low operating temperatures, giving minimum wear and long life to the flanges and the brake lining. The full-wrapped brakes are of the band and shoe type. The brake hand lever is connected to the brake bands through a compound brake leverage system, assuring quick stops and positive holding of the load, while an auxiliary air booster on the brake mechanism can be used optionally to lessen the manual effort required to handle the brake when operating at great depths.

The sand and coring reel is mounted on the line shaft and constitutes an integral element of the draw works unit. The reel, 54 inches wide and with a spool diameter of 13 inches, has a capacity of 12,500 feet of ⅝-inch wire line, and is equipped with a band-type brake operated from a hand lever at the driller's position through a compound brake leverage system.

The rotary is driven by a countershaft, connected through a friction clutch located on the high-speed jack shaft extension. The clutch is air-operated by a hand lever from the panel board at the driller's position. A foot pedal is also provided for operating this clutch when the sand reel is in operation, while a second pedal operates the engine throttles during hoisting operations. Levers located in the instrument panel permit compounding all engines with the foot throttle.

The hydromatic brake is connected with the drum shaft by means of a spline-type air-operated clutch controlled by a lever in the control panel, which permits disengagement of the brake when raising the traveling block. Among the other accessories are an automatic cathead which is operated by the driller, and a spinning line cathead.

Rig Controls

The rig controls which govern all engine clutches, compound clutches, pumps, and transmission speeds are also operated by the driller from his position by means of air valves. By manpulating the hand levers, the driller is able to select any combination of engines desired, facilitated by quadruple-width chains and spline-type clutches on the engine shafts.

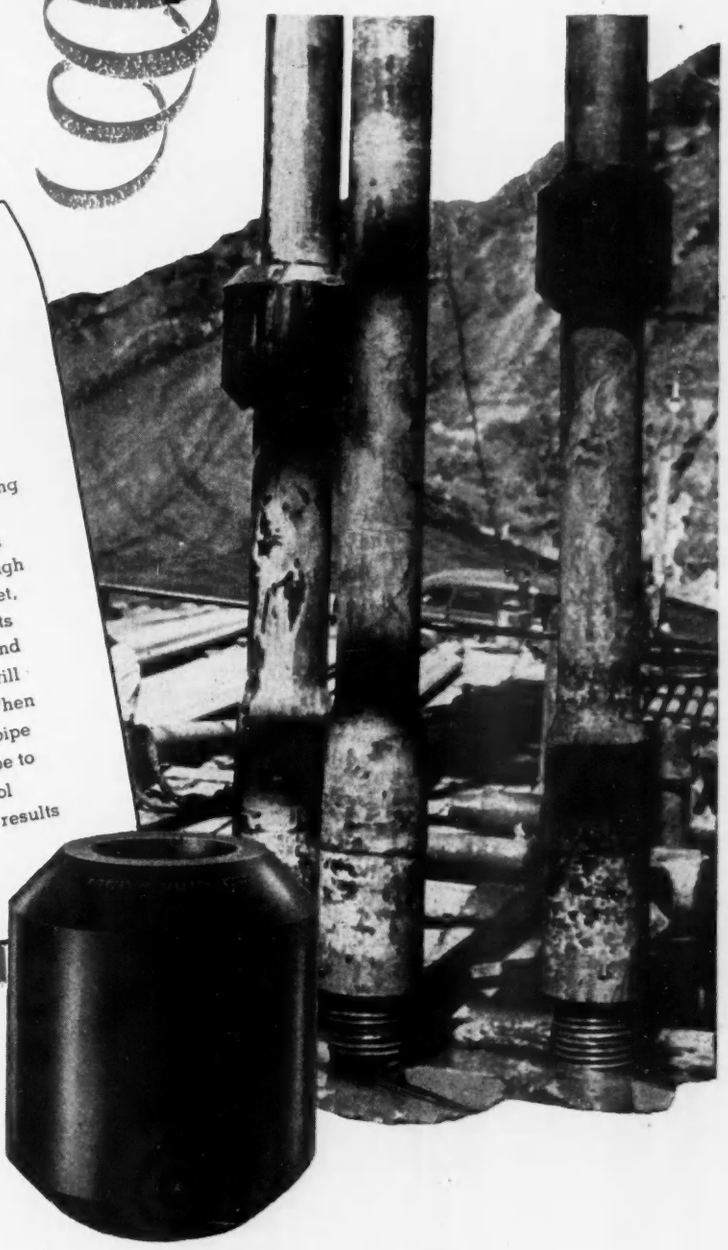
The 7⅜ x 20-inch main mud pump on Gardner Brothers' rig is connected by belt to the No. 2 engine, and an auxiliary pump is also available for service when needed, its size being 7½ x 18 inches. Water for the rig is furnished by a 4 x 6-inch power pump driven by a gas engine, while a centrifugal pump operating from the No. 1 engine shaft supplies water for the hydromatic brake. Electricity is furnished by a ten-kilowatt variable-speed generator which also operates from the No. 1 engine shaft, and in addition, an auxiliary light plant, consisting of a 15-kilowatt generator driven by a gasoline engine, is provided.

Stabilizers *Vs* Torque!

★ DURING THE LAST EIGHT YEARS, various companies have had a great deal of trouble due to kinking drill pipe that was running inside casing without Drill Pipe Stabilizers or Casing Protectors on the complete string. One of the operators who uses Stabilizers and Protectors has explained the reason why.

He wrote:

"This trouble has been eliminated by keeping all drill pipe stabilized inside the casing. It was found that 5-9/16" and 4½" drill pipe should have approximately 10" OD stabilizers on the pipe if it is being used inside 13⅜" casing; approximately 8" diameter inside 11¾" casing; or 7⅝" diameter inside 10¾" casing. When drill pipe is not stabilized in casing, the torque will run as high as the steam pressure, sometimes completely stopping the drill pipe. After installation of stabilizers or protectors, torque will drop back to normal. This torque builds up in all surface casing even though only 400' may be set. The more casing that is set, the worse the torque becomes. The torque starts building up in the drill pipe at the shoe joint and keeps working up the string. This kinks the drill pipe between the shoe joint and the Kelly. When torque gets to a certain high point, the drill pipe kicks loose and spins, causing the lower pipe to turn faster than the upper, loosening the tool joints and causing them to 'wobble' which results in broken pins and wash-out joints."



Many companies have discovered that it pays to keep Stabilizers or Protectors on all joints running inside the casing, plus enough out in the open hole to allow for the footage made between trips. Call your Patterson-Ballagh man *for complete (100%) drill pipe and casing protection!*

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Efficient Use Packers

By J. MURRAY WALKER, Lane-Wells Company, Tulsa

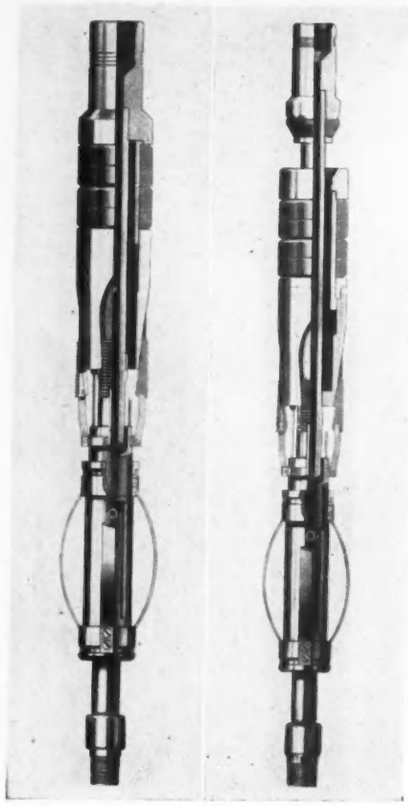


Figure 1 (left). Production type packer.
Figure 2 (right). Circulation type packer.

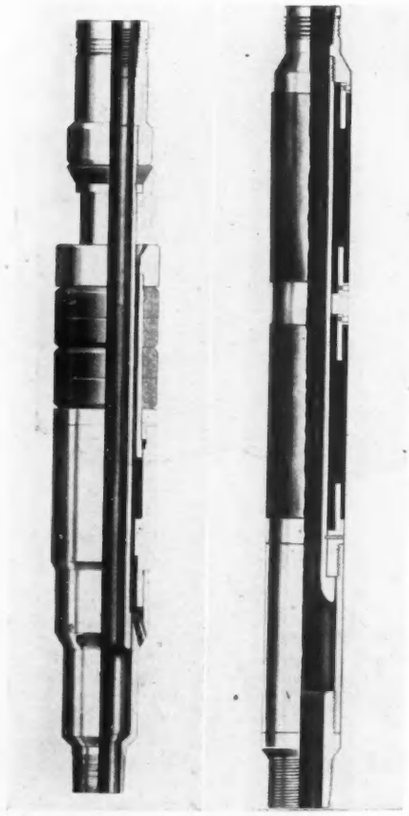


Figure 3 (left). Anchor type casing packer (may be used for bottom hole packer by addition of bottom collar)
Figure 4 (right). Anchor type formation packer.

PACKERS have become standard equipment in oil well completions, and their selection, installation and use should be properly understood. Occasionally an operator complains of a "packer failure." However, when the fault for the failure is finally nailed down it generally can be traced to the improper selection or installation of the tool and not to the packer itself. Because packers are so widely and effectively used, a discussion of the selection of the proper type packer with the attendant features of care, installation and use may be of benefit to many in the industry. The following seeks to describe briefly the different types of oil well packers most frequently used, without enlarging upon the details of highly specialized single installation types.

Various types of oil well packers have been used as an aid in the economical and efficient production of oil for many years. Without going into detailed descriptions of early packer designs, it is sufficient to note that many production advantages were gained by their use. The principles involved in design and the techniques applied to installation and operation, then as now, were recognized as beneficial to efficient and economical operation of many wells.

Because of inferior design, poor construction and poor materials, many difficulties were encountered in the early days of packer use. As a result of these difficulties many oil men hesitated to use packers, even though the need was apparent. However, through the persistent effort of men who appreciated the value of their use in the field, most of these difficulties were overcome and today the packer is a commonly used production tool.

Completion and production practices are somewhat different than they were a few years ago and consequently allow for the use of safer and more efficient packer types. Since a great many wells are cased to total depth and perforated for production, it becomes possible to use a packer that is protected throughout its useful life in the well by the production string of casing. This type of packer is usually the hook-wall casing packer, although an anchor type packer may be used.

Hook-Wall Type

The features of a hook-wall packer (Figures 1 and 2) may be described as follows: The essential parts comprising the packer are a packing element, a slip and cage assembly, and a tube of a comparable size and attachment to the well tubing. The packing element should be of a resilient material capable of withstanding and holding against high pressures for prolonged periods of time, of returning to its original shape or shapes for resetting or ease of removal from the well; of resistance to attack from various types of well fluid (either natural or added), and of a construction that will prevent adhesion or vulcanization to the casing walls.

The packing element material is usually made of natural or synthetic rubber to meet the above conditions, but occasionally consists of lead. The rubber must be a good compressible material capable of withstanding high pressures and temperatures, but lead must be replaced after each set.

The pack-off is usually obtained by the application of compressive force which can be accomplished by setting a part of the tubing weight on the packer or pulling tension in the tubing string, dependent on packer construction.

A slip and cage assembly is a device attached to and made a part of a hook-wall packer, for the purpose of attaching the packer to the casing. It is so constructed that a packer may be attached to or detached from the casing at will. It consists of a sleeve capable of sliding on the packer body, to which is attached a group of springs, usually four in number, known as friction springs, and a set of slips or wedges which bear on a tapered or conical surface. The sleeve travel is usually controlled by setting pins in slots, commonly J-slots. Friction springs bear against the casing wall and hold the cage assembly so that, when the packer is at the setting depth, rotation or vertical movement of the tubing is then only limited by J-slots in the sleeve. Slips or wedges slide against the tapered or conical surfaces to engage the casing wall in such a manner as to secure a firm attachment. Slip travel is again limited by the cage assembly travel limits and the walls of the casing itself. This permits applying the compressive force necessary to expand the packing element to secure the pack-off.

The tube or body of the hook-wall packer is usually similar to and of the same internal diameter as the well tubing. The entire packer has been so constructed that complete control of its movement and use in the well is possible from the surface. A hook-wall packer can be used at any point within the cased depth of a well, provided the proper size packer is selected for the casing in the well.

Anchor Type

Sometimes an anchor-type packer is employed for use in a cased well. The construction of an anchor packer is sim-

Of Oil Well

Correct installation and careful maintenance of most suitable packer assure best results

ilar to a hook-wall packer with the exception of the slip and cage assembly. Means for providing the application of a compressive force to the packing element is within the anchor itself. The anchor is usually a sufficient length of the well tubing attached to the bottom end of the packer to reach to the bottom of the well. An anchor packer can only be positioned at one place in a well, dependent on the length of anchor. If it should be desired to change the pack-off position, the packer must be removed from the well and the length of anchor changed to suit the needs of the changed position of pack-off. An anchor packer may be used either inside of the well casing or in uncased hole. Slightly different sizes and shapes of packing element will be used on the packer selected for open or uncased hole to that selected for use inside the casing (Figures 3 and 4). Again, control of the packer from the surface must be a prime consideration.

Features of Construction and Operation

Both of these types, hook-wall and anchor-type packers, may be found to embody several additional features and constructional differences. Some differences of construction are made to meet specific well problems, some the individuality of the different manufacturers, and still others to satisfy a price requirement. A basic consideration should always be kept in mind. The design of any tool to be lowered into an oil well should embody the least possible number of working parts in the simplest possible arrangement to accomplish the purpose for which it is designed.

Other types of packers have been used—such as the disc type which depends on pipe rotation to secure the necessary force to obtain a pack-off. This type is not extensively employed because of the manner of operation, difficulty of removal from wells, and other objections which present themselves in deep and high-pressure wells.

While describing the two most commonly used packer types, a few illustrations to delineate some of the construction differences should be kept in mind. Figures 1 and 2 illustrate hook-wall packers, Figure 1 being the ordinary production type packer which is widely used in many producing wells, and Figure 2 the circulation-type packer made very similar to the production-type but embodying the additional feature of a large internal by-pass. The latter is used for production work as well as testing and permits faster running in and out of a fluid-filled well.

Figure 5 depicts a thin-wall type, hook-wall packer designed to meet a specific well problem: that of a large tubing or casing nearly filling the area of the production casing. Figure 6 shows a long stroke circulation packer designed for very deep well operation which permits opening the internal by-pass valve without disturbing the pack-off. Figure 7 illustrates a tubing packer of hook-wall design, made very small for special production problems arising within the ordinary well tubing. These packers are run on a "macaroni" or small diameter tubing and set inside the standard well tubing.

Figures 3 and 4 illustrate two types of anchor packers. Shown in Figure 3 is an anchor-type packer for use inside casing. It also may be used as a bottom-hole type or set on top of a liner inside a larger diameter casing. The packer in Figure 4 is used principally in open or uncased hole. The additional length of packing elements is necessary to assure a pack-off on the irregular surfaces of uncased hole. The anchor formation packer is selected to satisfy a specific need. There are limitations imposed on the selection of the proper size packer by the well conditions. It should be remembered the diameter of the open hole below the casing is sometimes larger than the internal diameter of the casing. The packer is then selected to allow sufficient clearance to pass through the casing but large enough to pack off in the open hole. Even then both conditions cannot always be satisfied and means other than a packer must be used to do the job.

Selection of Type of Packer

With the various types and designs of packers in mind, the proper selection of packer must be determined by the use to which it is put. This determination is only satisfactorily made by studying the problem for each well. One of the first considerations is to learn the desirable dimensions of the packer, which of necessity is limited to the individual well's equipment. The two main features being the casing size, weight and grade, and the tubing size, thread, and end design. Packers are constructed nearly to fill the space within the casing but to permit sufficient clearance for ease of running. It then becomes apparent that a great number of packer sizes will be available and the proper size to secure maximum performance must be selected.

Other well conditions must be considered such as:

1. Will there be fluid in the well? If so, what is the fluid? In the previous paragraphs the description of different

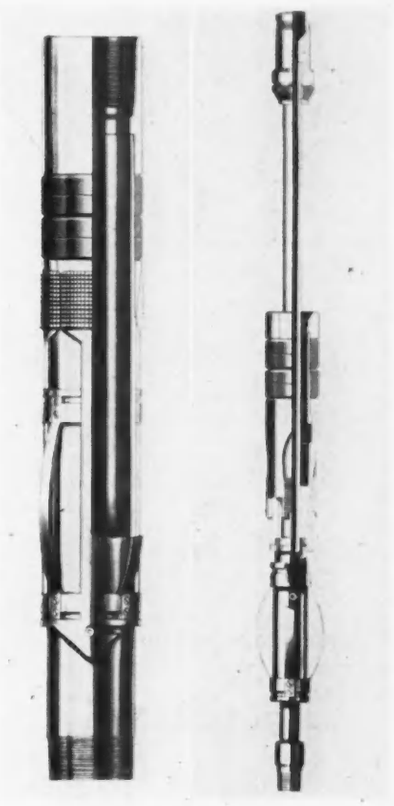


Figure 5 (left).
Thin wall casing type packer.

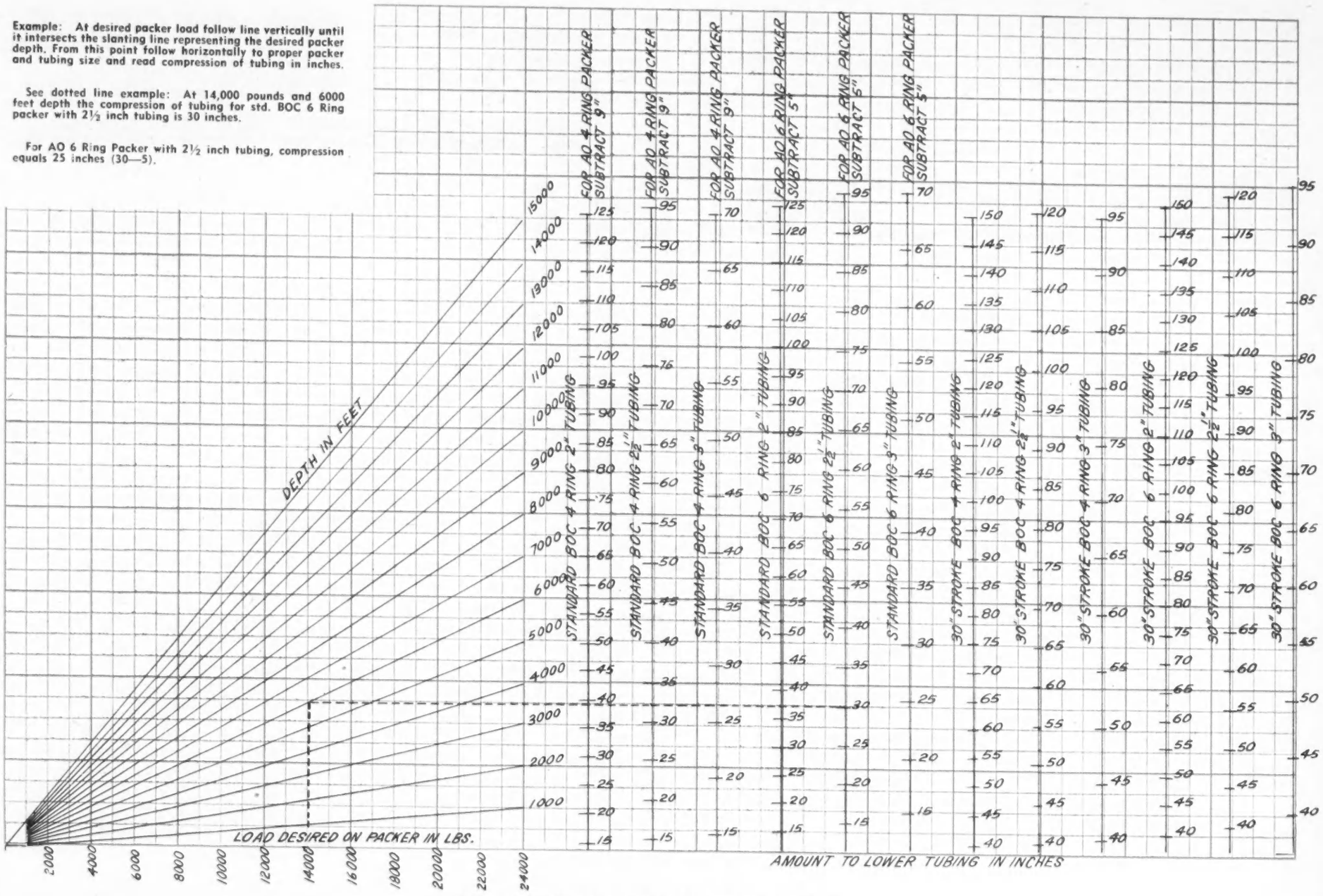
Figure 6 (right).
Long stroke circulation type packer.

Figure 7 thin wall tubing flow packer.

Example: At desired packer load follow line vertically until it intersects the slanting line representing the desired packer depth. From this point follow horizontally to proper packer and tubing size and read compression of tubing in inches.

See dotted line example: At 14,000 pounds and 6000 feet depth the compression of tubing for std. BOC 6 Ring packer with 2½ inch tubing is 30 inches.

For AO 6 Ring Packer with 2½ inch tubing, compression equals 25 inches (30—5).



Packer setting chart (for all fluids, air or combinations thereof).

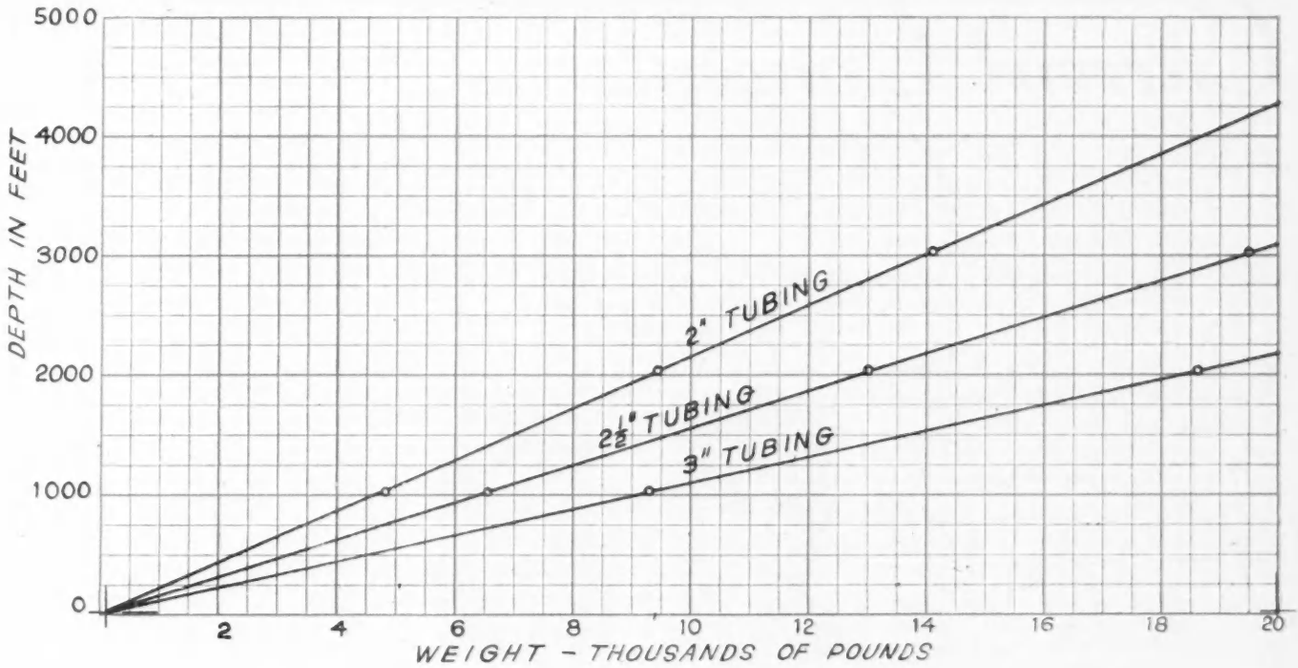


Chart showing relation of tubing weight to depth.

packer types gives the basis for choosing the correct packer.

2. Is the packer to be set inside casing or open hole below? The choice of packer will depend on the location of the desired pack-off point within the well. Normally, an anchor formation packer would be chosen for use in open formation while a hook-wall packer would be chosen for use inside casing.

3. Is the casing one continuous string of the same size, weight, and grade of pipe, or is it broken by windows, milled-out sections, perforated or damaged in any manner? The answer to this should be readily available in the well records, but it must be remembered that the packer selected to meet one set of conditions at the pack-off point many encounter several other sets of conditions and limitations on its travel to the pack-off point.

4. Is the problem a simple pumping problem or will it be a flowing problem? A full review of well conditions must be made to enable proper selection.

5. Is it to be used for dual completion? This question can only be answered by considering all of the possibilities of one or both zones having to be pumped or whether either or both will flow.

6. Is there a float collar in the string? If so, where is it and is the casing tally available? The packer installation must be made so that the pack-off point is selected a sufficient distance from either casing couplings or float collars so that neither the packing element nor the slip and cage assembly may be affected.

7. Is it a producing well or an input or injection well? Producing well problems have been discussed in preceding paragraphs. Injection or input wells present additional considerations. A point of importance is a study of differential pressures and a means of controlling them. The study should recognize tubing string weights and annulus

	SIZE	WEIGHT
Nom.	OD.	lbs/ft.
2 in.	2.375	4.70
2½ in.	2.875	6.50
3 in.	3.500	9.30

loading. Saline fluid injections possibly will require non-corrosive materials being utilized in packer construction. Acidizing procedures utilizing various packer combinations can be arranged by fully reviewing all attendant conditions and properly selecting the packer and packer combination to satisfy these conditions.

8. Is it to be a temporary or permanent installation? Temporary installations will fall chiefly into the testing or acidizing classifications. For these uses an all-purpose packer such as the circulation type is most desirable. Permanent installations need not be further discussed at this point as this selection includes the material discussed throughout this paper.

9. What will the setting depth and possible well temperature be at that depth? This question invites a study of material strength, mechanical parts action, packing material behavior and overall performance to be expected under extreme conditions. All of these things have been thoroughly studied and provision made for sufficiently large factors of safety provided in the design and construction of accepted packers.

10. Is the packer to be used in conjunction with other equipment such as gas lift equipment, hydraulic pumps, circulation sleeves, kickoff valves, botton hole chokes, etc.? This phase of packer selection requires a review of the limiting features of the supplementary equipment and the formulation of a plan to adapt the component parts each to the other.

It is quite apparent that full information concerning the problem must be thoroughly gathered and studied and the installation planned prior to selecting and installing the packer. The plan is not then complete unless a means of removing the packer from the well prior to installing it, is considered.

Planning the removal of a packer prior to its installation is just as important as the decision to use a packer. Precautions should be taken to prevent formations heaving in on top of the packer. Casings should be thoroughly cleaned of cement and provision made not to exceed collapse strengths of tubing or casing. The possibility of the deposition of material such as gypsum, salt, scale, etc., from well waters should be guarded against. Many times the addition of a gel-forming clay in the annulus immediately above a packer provides for the suspension of foreign or deposited material and lubrication of the installation. These are only a few of the points to be observed but will lead to careful thought in planning the installation.

A thorough study of the problem of selecting the best packer to accomplish the desired results, planning and executing the installation in an efficient manner, and attention to the care and maintenance of the packer should insure the ultimate in performance.

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Watch for It

Current Concepts OF SECONDARY RECOVERY

By N. VAN WINGEN, Richfield Oil Corporation, Los Angeles, and
NORRIS JOHNSTON, General Petroleum Corporation, Los Angeles

THE California District Topical Committee on Production Technology undertook to review recent investigations pertaining to the secondary recovery of oil. The problem has been approached in the literature from several points of view ranging from that of the academic laboratory to work done and observations made for the purpose of achieving a specific answer to a special field problem. It is the purpose of this paper* first to review the work which has been accomplished, and second to suggest experiments which will lead to a more complete understanding of the mechanism of fluid displacement.

For the purpose of this analysis, secondary recovery has been limited to water flooding and air or gas drive procedures of the type currently being applied primarily to the Eastern and Mid-Continent oil fields of the United States. Furthermore, in keeping with the proposed "Glossary Relating to Reservoir Behavior" as prepared by the committee (not yet published in final form) the term secondary recovery has been considered to refer only to recovery by any method (natural flow or artificial lift) of that petroleum which enters a well as a result of augmentation of native reservoir energy (as by fluid injection) after a reservoir has nearly reached its economic production limit by primary recovery methods. Hence, mining and thermal methods of secondary recovery, as well as primary pressure control methods of operation, have not been considered in this analysis.

It was not feasible to review all the papers published pertaining to secondary recovery methods of operation. Instead, the list as shown in the attached bibliography was selected as being representative of currently accepted concepts.

Literature Review

The available literature pertaining to secondary recovery methods of operation can be divided into two general classifications: (a) those dealing with the analytical and technological aspects of the subject, and (b) those describing results as actually obtained in various fields and pools. From the viewpoint of the California operator, it is apparent that at the present time the major benefit of past studies will accrue from the first-mentioned group, as actual field experiences in the Eastern and Mid-Continent pools have little direct bearing because of the widely different conditions encountered for the majority of California reservoirs.

van Wingen

Johnston

In reviewing the literature pertaining to laboratory and analytical analysis, it is apparent in many instances that there is a tendency on the part of the investigators to draw more elaborate conclusions than the fundamental nature of the data would seem to warrant, and also that in striving for useful and practical results a tendency exists for experimenters to permit too many factors too vary, thus leading to results of questionable fundamental value. Offsetting this, certain groups have gone so far in the direction of oversimplification that the experimental results contribute little to the understanding of actual reservoir behavior.

The majority of research performed to date has dealt with unconsolidated sands and has been conducted without the consideration of a second immiscible liquid phase to simulate interstitial water. Yet, as producing sands normally contain water, it is to be seriously questioned if results of experimental laboratory work on samples 100 percent oil saturated can be applied to actual field problems. Likewise, it is to be cautioned that any conclusions based on experimental work performed with one type of sand do not necessarily apply quantitatively to any other sand. Also, great care should be exercised with regard to the application of results of laboratory experiments to problems of reservoir behavior as a small model may not always adequately duplicate the behavior of the prototype.

Some suggestions for experiments that will bring about a more complete knowledge of the mechanism of fluid displacement

Bearing the above limitations in mind, the following statements summarize current knowledge of theoretical concepts pertaining to secondary recovery methods of operation:

Sand Characteristics

1. Recoveries from different sands having comparable fluid saturations may be quite different because of inherent differences in the sands themselves.[1, 2, 3]

2. Water flooding has been most successful in fine-grained, tightly cemented sands. It is significant that such sands characteristically have a high residual oil content prior to flooding.[3]

3. The treatment of core samples in the laboratory is frequently such as to destroy the original conditions prevailing on the solid surfaces so that water flood studies with such samples probably yield results which have very little meaning so far as actual reservoir behavior is concerned.[3]

4. In a petroleum reservoir, both oil-wet and water-wet sand surfaces coexist with a predominance, however, of the water-wet surfaces.[3]

5. Minerals found in oil reservoirs are chiefly silica and calcite, both of which are hydrophilic. However, the nature of the materials adsorbed on the mineral surfaces may determine whether the solid phase is hydrophilic or hydrophobic.[9]

Fluid Characteristics

1. The viscosity of oil if within certain limits appears to be of less importance than the saturation in governing the ultimate efficiency of oil recovery.[1, 3]

2. Oils successfully subjected to secondary recovery operations have ranged from two to 30 times the viscosity of water.[3]

3. Other conditions being equal the time required for any given recovery varies directly with the viscosity.[3]

4. The produced water-oil ratio for a given recovery increases with the oil viscosity. Hence, economic ultimate recovery is diminished correspondingly. However, if the economics of recovery are disregarded, ultimate recovery is independent of viscosity.[3]

5. The fluid with the greater adhesion tension with reference to the solid phase

* The accompanying article constitutes but a portion of a paper presented before the Pacific Coast District of the American Petroleum Institute's Division of Production, which met April 11-12, 1946, in Los Angeles. The original paper was presented under the title of "Current Concepts of Secondary Recovery and Their Application of California Reservoirs," and in addition to the material presented herewith also (1) enumerated briefly secondary recovery and gas and oil storage operations which have been or are being conducted in California, and (2) discussed future secondary recovery possibilities for California reservoirs. As presented here, the latter two phases have been eliminated completely.

will tend to displace the fluid with the lesser adhesion tension.[9]

6. As gas is a non-wetting phase, it will pass through channels already open and will tend to move the oil by viscous drag rather than by piston action.[2,7]

7. The effective permeability of the sand to a fluid phase is inversely related to the difference in pressure across the interface between the fluid phases (capillary prssure). As the saturation of a fluid phase decreases, its capillary pressure increases, and the permeability of the sand to that phase decreases.[3,20]

Fluid Displacement

1. The displacement of oil is probably accomplished by the same mechanism, irrespective of whether water is introduced artifically or by natural encroachment.[9]

2. Displacement of oil from the reservoir involves the disturbance of the equilibruim between interfacial tensions of four phases: gas, oil, water and solid minerals.[3,20]

3. Capillary forces are important in determining the most advantageous rate of advance of the injection medium.[1,3]

4. Artificial control of interfacial tension between water and oil by use of surface active chemicals has so far failed in practical application because the surface active agents become adsorbed upon the solid surfaces and the advancing water front is depleted of these agents before any beneficial effects can be observed.[3]

5. The type of three phase diagram developed by Leverett and Lewis[21] can be adapted to show gas-oil ratios and water-oil ratios of the flowing stream which, in turn, will clearly indicate the saturation ranges for which either water or gas drives are economical. For the specific conditions investigated by these authors upon which the diagram is based, it is concluded that no oil flows when its residual saturation is less than 15 percent. It is indicated, furthermore, that the presence of interstitial water makes it possible to obtain a higher ultimate percent recovery of the oil originally in place.[1,3,5]

6. Indicated recoveries as obtained from laboratory flooding of core samples generally agree with results computed using reliable relative permeability data.[5]

7. Gas and water saturation are important in determining the ratio of the injected fluid to oil. Thus, if the initial mobility* of the water is greater than that of the oil, water flooding may not be economically feasible because of excessive water-oil ratios.[1,2,3,5,9,12]

8. The two saturation conditions which are critical to the success of secondary recovery operations are (1) that at which a small decrease in liquid saturation will produce continuously connected flow channels for both liquid and gas, and (2) that at which the water becomes more mobile with the oil.[3]

9. The critical saturations depend upon the interfacial tensions of the various phases and the pore size distribution. Attempts to correlate experimental data on the basis of a "mean" pore radius are not valid because the critical saturations depend upon the size of the larger continuous channels.[3]

10. The initial stage of water flooding creates a bank of oil ahead of the drive, provided that initially the mobility of the oil is greater than the mobility of the water. During this period displacement is by piston action and oil recovery efficiencies are high.[1,3]

11. The initial stage is followed by the subordinate or friction-shearing action stage (viscous drag). This displacement mechanism is inefficient as compared to the initial stage.[1,3]

12. In the case of a gas drive an action like that of a water drive occurs, except that the initial stage is always short and may even be non-existent and the subordinate stage is long.[1,7]

13. Fingering of an encroaching front occurs when the mobility of the driving fluid is greater than that of the driven fluid.[5]

14. Gas by-passing may be reduced by adding liquid to input wells in sufficient quantity to reduce the effective permeability to gas.[22]

15. The sweeping efficiency of a flood depends on the arrangement of input and output wells.[2,13]

16. Within limits, wider well spacing may be offset by higher injection pressures.[3]

17. Flooding efficiencies of the various well patterns can be compared on a theoretical basis as follows: line drive —71 percent; staggered line drive—80 percent; five-spot pattern—72 percent; seven-spot pattern—74 percent. Thus, it is to be noted that the efficiency of the various well patterns is approximately the same.[3,10,13]

18. Because of the presence of free gas in the formation, more water must be injected than the total oil and water ultimately produced.[2,3]

19. In order to avoid lifting the overburden, the maximum bottom hole injection pressure should not exceed approximately 1.5 pounds per square inch per foot of depth, the actual value being a function of the characteristics of the formation.[3]

20. Delayed drilling of production wells in a reservoir with a *non-uniform* sand will generally result in a greater ultimate recovery provided the water is introduced into the sands at a balanced rate through each intake well so as to prevent an offcenter concentration of oil within the pattern.[11]

21. Actual field data for a *uniform* sand have shown that no benefits were derived from delayed drilling and that in some cases a lower recovery actually was obtained.[11]

22. The behavior of water input wells, water requirements for a lease, and injection pressures can be predicted on the basis of an analytical method which combines the equations for radial encroachment with those of the steady rate for various flooding patterns. Data so computed have been found to correlate with actual performance.[10]

23. The chief value of electrolytic model studies of secondary recovery operations is in predicting the relative value of different flood patterns.[3]

24. Mathematical analysis shows that electrolytic models behave in accord with the properties of incompressible fluids, or in special cases iso-thermal perfect gases.[3]

25. Instability of water-oil interface resulting from an unfavorable viscosity ratio for the two fluids has not as yet been successfully represented in electrolytic models.[3]

26. Anisotropic sand conditions can be only partially duplicated in electrolytic models.[3]

Recovery Efficiency

1. Current usage defines flooding efficiency as the ratio of the area flooded to the total area. A more precise concept, however, would involve the ratio of volume flooded to the total volume. A prime prerequisite of successful secondary recovery operations is a sufficiently high oil saturation to assure mobility of the oil. In the evaluation of any area for secondary recovery possibilities, saturations should therefore be expressed in terms of percent of pore volume filled. Any indication of oil content expressed in terms of barrels per acre or even barrels per acre foot is misleading and may lead to costly failure as it furnishes no clue with regard to the probable displacement efficiency which might be obtained in the reservoir.[1,2,3,9]

2. Most likely prospects for secondary recovery operations lie in pools produced under a depletion type mechanism in which little attention was given to the conservation of reservoir energy.[3]

3. Preparations for secondary recovery operations should include assembling and interpreting all available information concerning the property with regard to formation pressures and core analysis, the availability of old wells for either production or injection, the availability of a supply of suitable displacing fluid, estimated injection pressures, and the probable size of the plant which will be needed.[3]

4. Interpretation of laboratory core tests for the purpose of estimating probable recoveries is difficult as the degree to which the core has been flushed by drilling fluids and the nature of the liquid lost due to the gas expansion cannot be readily evaluated. Thus, interpretation often has to be made on an empirical basis.[1,3]

5. The oil saturation of a sand can be reduced to a lower value by a gas drive if the sand has a high water saturation, as higher liquid saturations mean lower gas saturations and hence a lower permeability to gas.[3,5]

6. Sands containing much water but little gas may be successfully gas driven while sands containing little water may be water flooded to advantage.[1,3,6]

7. Where either method can be used successfully, the effectiveness of a gas drive is generally less than that of a water drive.[3]

8. Because of rapid increases in permeability to gas and decreases in the permeability to oil secondary gas drive operations are essentially a method for obtaining a given ultimate recovery within a shorter time period.[2]

9. In lenticular but continuous sands the highest recovery can be obtained at rates of production so low that the capillary creep in the tight channels can keep pace with hydraulic flow in the more permeable sands. However, such a production rate may be uneconomic.[4]

10. Field reports indicate higher rates of recovery, lower gas-oil ratios and higher ultimate yields for conditions of intermittent injection. This cannot be substantiated by laboratory tests performed on small radial or linear samples. This difference in the field behavior

* Mobility is here defined as the effective permeability of a sand to a fluid phase divided by the reservoir viscosity of that fluid.

is due to (1) local variations in sand permeability, (2) redistribution of flux lines when input wells are shut in, or (3) changes in pattern arrangement, thus allowing a sweeping of "dead spots."[8]

11. To be successful, each intermittent cycle must be of sufficient duration to allow for an adequate redistribution of flux and equi-potential lines. If the time cycle is too short, the net effect is merely equivalent to continuous injection at a lower pressure. A few field tests for sands of less than 100 md permeability have indicated that the proper time period should be of the order of six months. Extremely high effective permeability will shorten the length of the necessary time cycle.[8]

12. Theoretically it can be demonstrated that the necessary injection portion of the time cycle can be shortened by increasing the injection pressure. However, the corresponding decline depends on fluid production rate which is limited by the conductivity of the entire system.[8]

Future Research

In spite of the foregoing rather impressive list of conclusions pertaining to the theoretical aspects of secondary recovery operations, it will be freely admitted that a great many problems remain unsolved. The lack of a thorough understanding of the various phases of fluid displacement is attributable at this time in part to the fact that numerous experiments which have been performed were conducted under conditions which bear little resemblance to those of the actual reservoirs they were supposed to duplicate. For example, conclusions based upon experimental work performed with high permeability recompacted loose sands do not necessarily apply quantitatively to tight consolidated sands. Other unfavorable conditions have been (a) failure to provide a second immiscible liquid phase to simulate the interstitial water, (b) failure to eliminate adequately end effect and leakage of fluids along the outer surface of sand samples, (c) failure to select experimental liquids which properly duplicate the reservoir fluid as regards the viscosity, interfacial tensions, gas solubility, and the content of polar bodies which may adsorb on sand, (d) failure to keep flow rates and pressure gradients within the limits which may actually be encountered within the reservoir, and (e) failure to terminate flooding experiments at gas-oil ratios or water-oil ratios in keeping with the economic feasibility of actual operations. In future research, every effort should be made to eliminate the above objections and to duplicate as far as is practical or meaningful the controlling factors and conditions existing in the formation.

The problems which need studying are many and complex. The following recommended tests do not necessarily represent a complete list sufficient to establish all the needed factors, but they should point the way to other tests and should narrow the region of unknowns.

Core Sampling and Core Analysis: Better core sampling methods should be developed so as to obtain samples as nearly indicative of reservoir conditions as possible. These should be taken in such a manner that in addition to giving a valid measure of the residual fluid contents, they could also be used directly for flooding tests without alteration as will occur when cores have to be cleaned and subsequently resaturated. This requirement would be met by the development of a method of taking cores entirely free from contamination.

Recovery Factors: This is the most important factor to be estimated prior to the inception of a secondary recovery operation and is one which is closely allied with the problem of relative permeability and interfacial tension. The principal problem here may be one of rate as affecting displacement efficiency rather than pressure gradients as is held by some investigators. The latter is not believed to be a pertinent factor except as it affects the rate. Much work has been done in this regard, but the problem is not as thoroughly understood as it should be.

By-Passing: By-passing is a largely unpredictable factor which is ultimately encountered in all secondary recovery projects. Practical laboratory scale models appear to give only qualitative results. This method of approach is time-consuming and limited in general to special cases. This indicates that possibly an analytical approach may yield results of more general value. This problem should be viewed from the standpoint of (a) preventing or at least minimizing by-passing initially by exercising adequate control over well rate, injection and producing well patterns, and by a proper selection of the injection medium, and (b) the development of suitable corrective measures to alleviate the condition once it has arisen.

Fluid Dynamics: In fundamental research, emphasis should be placed on a further study of relative permeability for low permeability sands over wide ranges of ratios of oil, water and gas. In the field of surface chemistry, further work should be done using uncontaminated materials as actually obtained from different reservoirs, in order to test various theories now advanced pertaining to interfacial tensions. A more concrete knowledge of both of these factors will be highly pertinent to a better concept of the fluid displacement mechanism.

Rate of Fluid Displacement: As regards the optimum rate of fluid displacement, additional work should be done, as a controversy exists regarding this point, with one investigator[16] reporting an increase in displacement efficiency with increased rate within a range of velocities compatible with those observed in actual oil field operations. Three other investigators, however, report the reverse of this contention. In these latter tests—and contrary to the first-mentioned—provision was made for interstitial water and it is probably for this reason that the indicated difference was found in the results.[17,18,19]

Delayed Drilling and Intermittent Injection: Additional work, on both an analytical and actual field experimental basis, is needed to develop more fully the range of applicability and the degree of increased recovery possibilities of the delayed drilling and the intermittent injection theories. As regards the latter, it is generally conceded that a systematic unbalancing of a flow pattern will yield additional oil due to a change of the flux and equipotential lines. This causes a sweeping of areas previously not affected by the flood. However, no adequate method has been developed to approximate the proper duration of the alternating time cycle. Likewise, while it has been demonstrated that delayed drilling is of benefit in heterogeneous sands, no determination has been made to establish a measure of the degree of homogeneity beyond which this practice is of negligible value in increasing ultimate recovery.

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Carbon Black Output Shows Big Gain; Gas Price Upped

Carbon black production last year crossed the billion-pound mark for the first time, the Bureau of Mines reported.

Total output was 1,052,798,000 pounds, an increase of 31 percent over 1944, of which 721,438,000 pounds was produced in Texas, an increase of 220,000,000 pounds over 1944, and 168,229,000 pounds in Louisiana, an increase of 8,200,000 pounds. Of the Texas production, 541,464,000 pounds came from the Panhandle district, an increase of 140,000 pounds over 1944.

The bureau reported a 21 percent increase in the amount of natural gas consumed in the manufacture of carbon black, to a total of 431,830 million cubic feet. The average yield of carbon black was 2.32 pounds per 1000 cubic feet against 2.2 pounds in 1944, and the average value of natural gas used increased to 2.28 cents per 1000 cubic feet from 1.62 cents in 1944 and was more than double the 1941 average of 1.13 cents.

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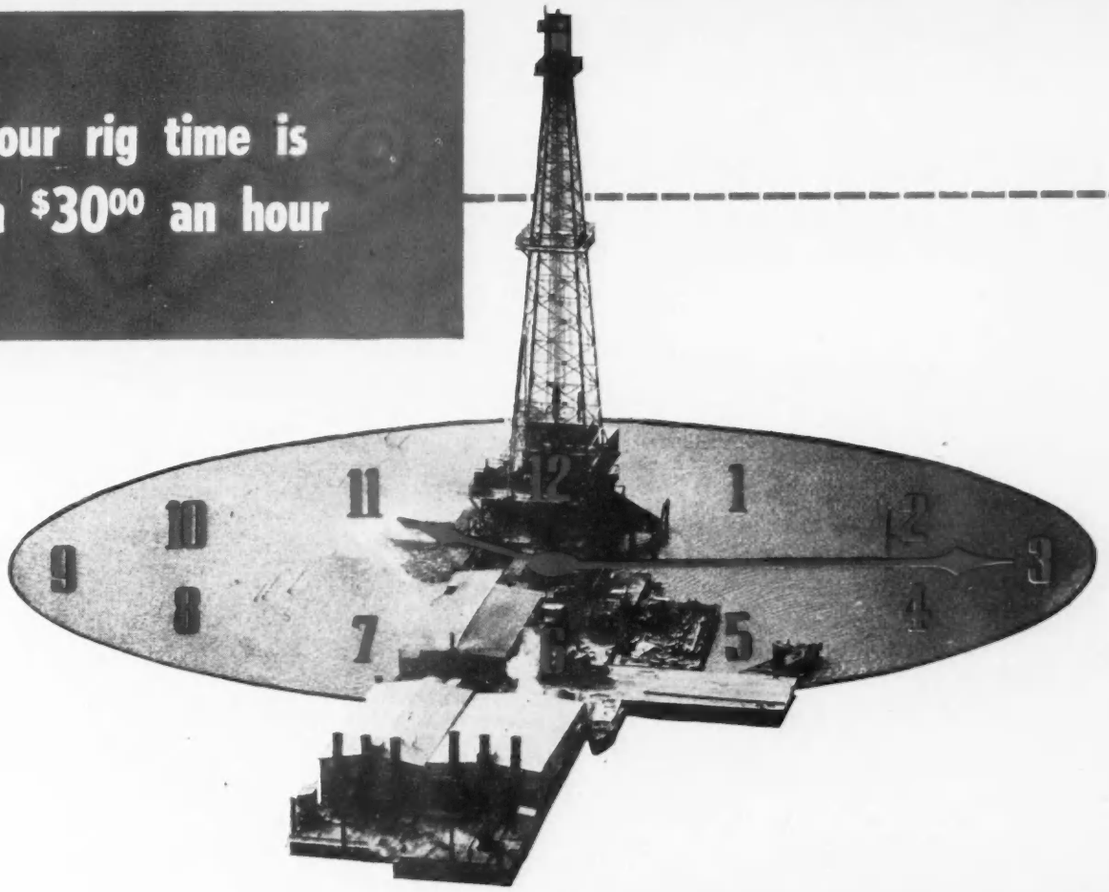

How much does it cost to change preventer rams?

A major oil company, one of the largest owners of rotary drilling rigs, is replacing all of its blowout preventers with Cameron Type "QRC's". This decision is the result of a study of the cost of changing rams in the Type "QRC" as compared to other models. Whereas the rams in the largest size "QRC" preventer can be changed in as little time as *15 minutes*, ram changing in large sizes of other models sometimes required up to *15 hours* or more. With from three to five ram changes required in the average Gulf Coast well, for example, the operator can quickly offset his investment in these new drilling control units by the saving of rig time.

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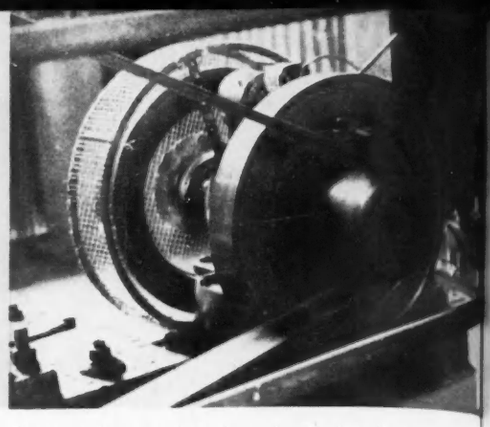
THEY SAVE THEIR COST IN RAM CHANGE TIME ALONE

Stripper Well Pumping Problems

By C. D. BORLAND
Production Engineer, Gulf Oil Corporation, Drumright, Oklahoma



Five-inch bore by six-inch stroke single-cylinder gas engine driving a standard rig front.

IN THE older oil fields of Oklahoma which were developed 25 years or more ago, production has, in the main, declined to the point where many of the wells pump off in less than 24 hours. This condition presents special problems in the selection of proper pump size and operating speed to obtain maximum low-cost operating efficiency.

Paraffin trouble, gas lock, and trouble with sand due to the necessity for pumping the wells close to bottom also are sources of sub-surface well expense which must be held in check if operation of these small wells is to be maintained on a profitable basis. In addition to sub-surface trouble, the operator is sometimes faced with the necessity for replacement or major repairs to worn out and obsolete surface equipment involving an outlay out of proportion to the small revenue from the well. In general, the operating problems can be grouped under two headings, namely, sub-surface and surface. The former group will be discussed first, particularly with respect to the economy of "slow pumping" as applied to the operation of stripper wells.

Pump Selection

Since only those wells where the available fluid is limited are being considered, the selection of a pump having the proper bore size is very important. In many cases, these small-volume wells have such a low fluid level that the pump plunger will normally pound fluid. Hence, the employment of a pump with too large a bore will tend to make the pounding action more severe. Fluid pounding is detrimental to good pump service in that it hastens the failure of pump plungers and valves by creating shock loads. The use of small-bore pumps operating at slow speeds will minimize pounding.

The majority of the small wells are produced with either a one-inch bore cup-and-repack plunger or a small bore (one-inch to 1¼-inch) metal-plunger pump. The cup-and-repack pump initial purchase price and repair expense are considerably below that of a metal-plunger pump. However, there are certain wells in the stripper class that cannot be satisfactorily produced with a cup-and-repack plunger pump. This is particularly true at those wells where sand is troublesome or where an extremely low fluid level exists. The presence of sand in the well fluid is very hard on a cup-and-repack plunger pump and results in short pump service. Experience has shown that a metal-to-metal pump will usually give better service in a sandy well. It has also been noted that small-bore cup-and-repack-plunger pumps will not satisfactorily produce some low fluid level wells if there is a strong vacuum on the casing. Cases are known where it was necessary to release periodically the vacuum on the casing in order to get a cup-and-repack-plunger pump to operate satisfactorily. Such cases have successfully been alleviated by installing a metal-plunger pump. The greater sealing area obtained with a metal plunger plus the pump's general design are given credit for the improved service obtained. Some cup-and-repack plunger pumps are so constructed that the area of seal between the plunger and the outer tube is small. Such a feature is conducive to slippage and poor valve action in low-fluid level, high-vacuum wells. The above comparison of the cup-and-repack plunger pump and the metal-plunger pump is not a fair one because the initial purchase prices of the two types of pump are not considered. It is intended to bring out the fact that there are cases where the more expensive metal-plunger pumps should be installed, even though the well's oil production is rather limited.

Gas

One factor that often influences pump service at small volume wells is the presence of gas. The pounding action encountered at many of the wells is sometimes more acute where gas is found in appreciable quantities. The low bottom-hole pressure existing in wells of this class is conducive to the release of dissolved gas. This gas, plus any free gas, can create a pumping problem. When the condition is severe the pump may become completely gas locked, which results in work for either the pumper or the pulling-unit crew. It is quite common in the old fields for the pulling-unit to be called out to a well to "bump the valves" of a pump that is gas locked. Gas locking readily occurs at part-time producers. The gas problem can be partially or completely solved by securing the greatest pump submergence possible, releasing or reducing casinghead pressure to a minimum, utilizing small-bore pumps and in extreme cases employing the aid of a gas anchor.

Paraffin

Another sub-surface problem often encountered in small-volume wells is the accumulation of paraffin inside the tubing and on the sucker-rod string. The difficulty generally starts when an attempt is made to change the bottom-hole pump. The pump either sticks before it is pulled out of the tubing, or is pulled out without too much trouble and then the replacement pump will not go to the bottom because of paraffin accumulation in the tubing. In case the pump sticks, a stripping job usually results, which is time-consuming, expensive, and generally causes damage to the sub-surface equipment. Both of these paraffin problems often make a scraping or steaming job necessary before the replacement pump can be installed.

In addition to removing paraffin from the tubing string by scraping or steaming, the use of commercial solvents or drip gasoline has at times aided in removing a pump that is fouled by paraffin. The general procedure is to dump the solvent or gasoline down either the casing or tubing. If it is known that the tubing is almost completely plugged with paraffin, best results are usually obtained by dumping the solution employed down the annular space between the casing and tubing and pumping it out through the tubing. This procedure may soften the paraffin to the extent that the pump can be removed. If the tubing has sufficient clearance between the sucker rods and the paraffin accumulation to permit the passage of the solution down the tubing, this method of injection may prove beneficial. Providing the pump is removed without having to strip the rods and tubing, it is good practice to run a scraper and remove as much of the paraffin accumulation as possible.

Sand

In addition to gas and paraffin, trouble with sand is also experienced in many small-volume wells. These wells usually have some loose sand in the bottom of the hole as cavings. Since the low fluid level makes it necessary to tube the well close to bottom, the pump then stands a good chance of picking up sand with the well fluid. This is evidenced by the number of scored and cut pump plungers and barrel tubes removed from the stripper wells.

Sand troubles often occur at a well immediately after a pump replacement. This is due to the fact that when a pump is unseated prior to being removed, the fluid in the tubing above the pump flows back into the well bore and stirs up loose sand in the bottom of the hole. One way of combatting this is to allow time for the sand to settle before putting the replacement pump in operation. When such a problem occurs at a well each time the pump is replaced, the tubing is usually equipped with a standing valve which prevents the fluid from dumping when the pump is unseated.

Stripping jobs resulting from the pump being fouled by sand occasionally occur at some of the part-time producers. Wells in this class usually operate from four to eight hours per day or from one to four days a week. Such an operating schedule allows plenty of time for any floating sand in the tubing to settle around the pump.

In general, the sand troubles confronted at small-volume wells can be lessened by the use of standing valves,

metal-plunger pumps, top-anchor pumps and where possible, full-time slow-motion operation.

Operating Cycle

After the problems of pump selection, gas, paraffin and sand have been considered, the pumping cycle still must be determined. The length of stroke common at stripper wells operated by a rig front is usually as short as the crank will permit, or from 18 inches to 20 inches. Where a rig front is still powered by an old two- or four-cycle single-cylinder gas engine, the pumping cycle will approach the minimum that can be obtained with satisfactory slow engine operation. This usually means from 13 to 15 strokes per minute. Since both the length of stroke and speed are more or less defined, the number of hours per day that a small well operates is the only remaining factor that will influence the volume of oil produced. The pumper can by the trial-and-error method usually arrive at the most satisfactory length of time to pump the well each day, or week. Quite often the well capacity is so small that a few hours of operation each day will produce the available fluid. Wells of this nature require considerably more attention than full-time producers and are more subject to sand trouble and gas locking. As a result, part-time operation is not desirable and should be eliminated, if practical.

Surface Equipment

Since the size of the surface equipment has a direct bearing upon the efficiency of stripper-well operation, the writer's experience with surface equipment problems in the older fields might be worth reviewing here. The surface equipment at a good many of the present small producers consists of a wooden standard rig front powered by a 25 or 35 horsepower single-cylinder, two or four-cycle gas engine. This equipment was installed at the time the wells were in the stage of flush production and, therefore, its size and speed are considerably greater than that required to handle the present production. During the last few years, some of the surface equipment became so badly worn that substitute material had to be installed. Such items as wooden sampson posts and walking beams have in some cases remained in service until their deteriorated condition presented a safety hazard. When the surface equipment at a small-volume well reaches the stage where replacement is necessary, one of the following four steps is usually taken:

1. The well is temporarily abandoned or plugged.
2. The portion of the surface equipment that failed, or is worn beyond repair, is replaced with similar equipment.
3. A pumping jack is set and a rod line is run to a nearby power or to the backside crank of an adjacent well.
4. A small pumping unit is installed in place of the obsolete rig front.

The step chosen depends upon the well conditions. If the well is a very small producer, it is shut down or the surface equipment patched up with second-hand material. The use of a pumping jack pulled by a rod line depends to a great extent upon the proximity of a power or rig front that has sufficient reserve power to pull another well. The installation of a pumping unit is expensive and is the last resort. The surface equipment as a whole has to be beyond repair and the well's daily oil production and reserves must be sufficient to insure a reasonable payout period. In general, the above procedure is adequate and permits each well to remain in operation so long as there is a chance to clear a small profit. However, there are some border line cases where the well's daily production is too small to warrant extensive repairs and too large to permit abandonment. Then the problem is to decide what type of repair work will remedy the condition and still not be too expensive. The solution of this problem is rather difficult and is governed by the nature of the trouble, that is, whether the engine, rig front, or both need replacement.

Under pull type pumping jack in operation with rig front.

Unique Solution

One of the major oil-producing companies in the Mid-Continent area solved its problem of engine trouble in a rather unique way. Early in 1943, this company was confronted with the problem of operating obsolete equipment at a well which was producing seven barrels of oil and one barrel of water per day from the Bartlesville sand at a depth of 2543 feet. The equipment consisted of 2525 feet of ¾-inch rods a 1 1/16-inch bore pump, and a standard wooden rig front powered by a 25-horsepower single-cylinder gas engine. The cycle of operation was 18 x 18-inch strokes per minute, which was the minimum that could be obtained with satisfactory engine operation. While producing under these conditions, the pump plunger was pounding fluid so hard that excessive trouble was being experienced with both surface and sub-surface equipment.

A reduction in pumping cycle was not possible without first spending several hundred dollars installing a countershaft and buying new belting. This solution was not considered practical because the high repair expense of the obsolete gas engine would not be eliminated. The problem was finally solved by the company's engineering department, which suggested that a 5-inch bore x 6-inch stroke single-cylinder gas engine be utilized to run the equipment already in place. The small engine was set on a concrete block located just back of the bedplate of the old single-cylinder gas engine. The driving pulley of the new engine was in line with, and belted to, the inside flywheel of the larger engine. In order to make room for the installation of the 5-inch x 6-inch engine, it was first necessary to strip the obsolete engine of everything except the bedplate, flywheels, crankshaft and clutch. That portion of the old engine remaining in place acted as a countershaft and thus made possible the use of the single-cylinder engine. (Figures 1 and 2.)

After the small engine was placed in service, the well's oil production increased approximately three barrels per day while the operating cycle was reduced from 18 x 18-inch strokes per minutes to 9 x 18-inch strokes per minute. Such a well speed requires an engine speed of 366 revolutions per minute and a countershaft (flywheel of obsolete single-cylinder engine) speed of 63 rpm. The speed reduction was accomplished by using the following pulleys:

10½" drive pulley on single-cylinder engine
62" flywheel or driven pulley on countershaft
18" clutch pulley
11' bandwheel

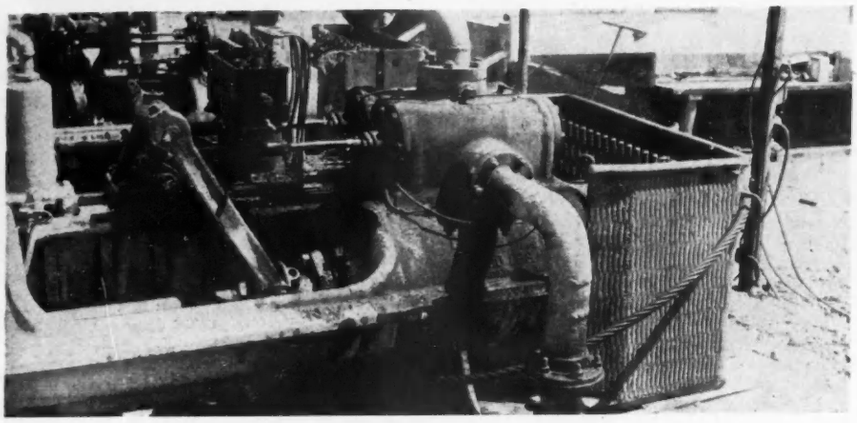
In addition to an oil increase, the slow pumping cycle also reduced the repair expense. The gain in oil production was attributed to an increase in pump efficiency and a reduction in down time resulting from equipment failures.

The above described installation was successful and resulted in similar replacements at various other wells. Such an installation is a very economical and satisfactory method of replacing old worn-out, single-cylinder engines without disturbing the remainder of the surface equipment and, in some cases, may prolong the profitable producing life of a marginal well. The size of the engine employed can be changed to meet the requirements of the particular well.

There are other cases at stripper wells where the engine is performing satisfactorily but the walking beam, sampson post, or both, need replacement and the production is too small to justify this expense. Such a problem has been solved many times in the field by setting a pumping jack and operating it with the engine already in use. The jack is usually set on a concrete foundation parallel with the belt hall and in such a position that it can actuate the rod string in the well. A stroke post is placed in line with, and approximately half-way between, the jack and the bandwheel crank. The stroke post is usually connected to the wrist pin by means of a rigid extension made out of pipe and to the jack with a short rod line. Such an installation gives very satisfactory service and is recommended for use at any small-volume well where the walking beam and sampson post are a source of trouble and need replacement. Figures 3 and 4 illustrate such equipment in operation.

When a part of the surface equipment at a stripper well is serviceable, the practice of utilizing a small single-cylinder gas engine to replace a worn out, obsolete single-cylinder engine or a pumping jack to replace a deteriorated walking beam and sampson post, is considered both economical and satisfactory. Such replacements are relatively inexpensive and will in many cases last for the life of the well. When all the surface equipment at a stripper well is worn beyond repair, the installation of a small pumping unit is recommended providing there is a good chance for the project to pay out before the well is abandoned.

Double-Walled Baffle Provides Safety Feature on Mud Pump



CREW SAFETY

In order to prevent possible injury to employes or equipment in event a mud pump steam head or bolts from a head should blow out, one major company has adopted the practice of enclosing that end of the mud pump with a three-sided box-like guard which is designed to stop, or at least materially reduce the speed of the projectiles. The enclosure shown consists of a section of steel plate which is attached to the pump, a space of some two feet being left between the head and the interior of the plate enclosure. Placed across this interior space is a section of heavy expanded metal, this baffle being intended to at least partially absorb the initial shock, with the outer plate completing the job. As a further precaution, a length of drilling cable is looped around the enclosure and anchored beneath the base of the pump.

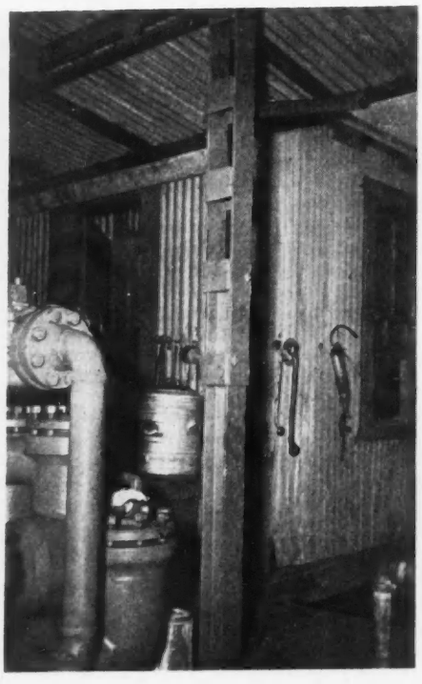
Telescopic Posts Permit Adjusting Roof Height

MATERIAL HANDLING

As part of a skid-mounted, unitized boiler feed water pump installation, corner posts which operate on a telescopic principle permit raising the roof into position for drilling, and lowering before moving to a new location. This facilitates loading the unit on trucks. As an added feature, when the roof is lowered, the overhanging sides are allowed to drop and protect the apparatus inside from damage in handling and from inclement weather.

The corner posts are made of H-beams about four feet long, welded at their bases to the skid structure. Welded to the roof bracing members and designed to fit over the corner supports are sleeves slightly larger than the H-beams, made of two strips of steel plate about three inches wide, joined together and spaced about four inches apart by a series of strips welded at intervals to form a sleeve which rests over the supports and slides freely over their surfaces. Two bolt holes are drilled through each sleeve and the guiding member in such position as to coincide when the roof is raised, and a ⅜-inch bolt is placed through the holes and tightened to hold the roof in position.

During operations, the hinged section of roof is propped outward by means of a steel brace, one end of which rests on a stop welded to the side of the corner post. The sides are let down by withdrawing the end of the brace from the stop. For moves of short distance, the roof is lowered until it rests on the top section of the pumps, with the sides hanging down but not reaching the floor. For long moves, the steam lines from the pumps are removed, allowing the roof to be lowered until the sides reach the floor, completely enclosing the unit.



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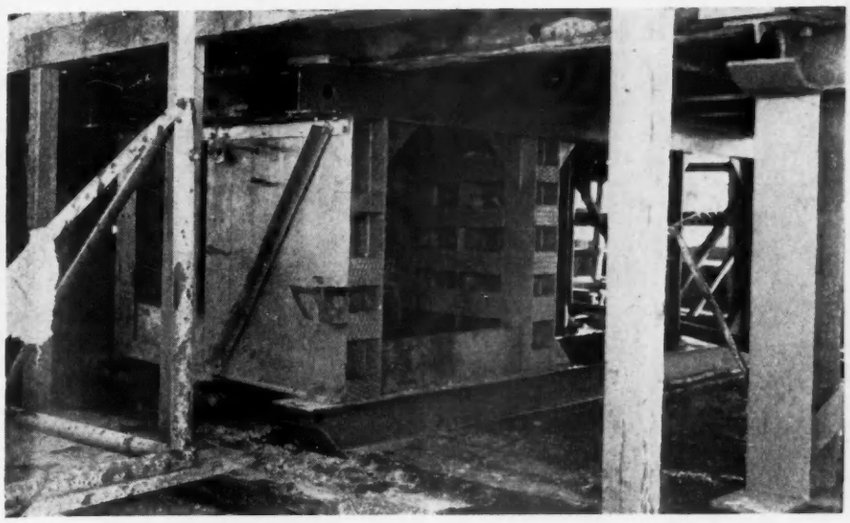
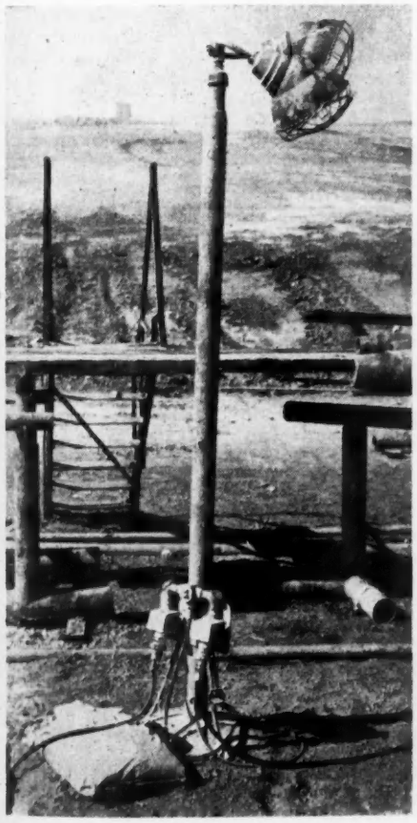
Convenient Sub-Floor Fittings Bin Utilizes Waste Space



In a move to conserve space and at the same time make more accessible a small tool and fittings bin, one company boxed in a portion of one of its derrick floor sub-structures. Channel and I-beam members of the structure were made into numerous small shelves that serve the dual purpose of providing a place to temporarily store odd fittings when picked up about the rig, and also provide a convenient, centralized position at which fittings can be obtained in a hurry if necessary, particularly when a breakdown occurs.

TOOL STORAGE

The steel plate material making up the siding and roofing, together with the small pieces of material making up the individual bins, add comparatively little to the overall weight of the sub-structure. The fact that this member is one of the last to be hauled away from the old location and one of the first to be positioned at the new location makes its use as a tool and fitting bin particularly desirable.

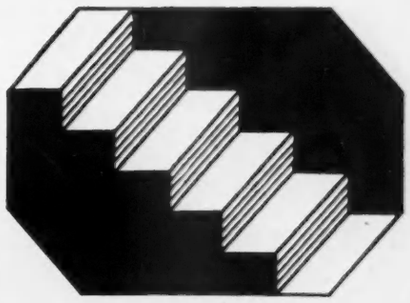


Unitized Light Provides Plug-in Sockets

One of the handiest pieces of equipment on the rig of one California drilling company is the dual-reflector light standard. Mounted on a heavy circular base, the pipe standard is sufficiently tall to permit directing the light downward on the working areas surrounding the rig and the two friction-tight conduit sections back of the reflectors may be directed easily to suit local working conditions. Another unusually handy feature on this installation is the provision which is made for plugging-in of other electrical equipment to outlet plugs mounted on the base of the light standard. Welded to the pipe standard a foot or so above its base is a light steel plate to which is affixed a pair of sockets. This permits speedy connecting up of other nearby lights or power equipment such as may be required on a cementing job or while running special test equipment.

RIG LIGHTING

The entire installation is shop-made and represents a small investment in proportion to the saving of time and convenience realized on the job.



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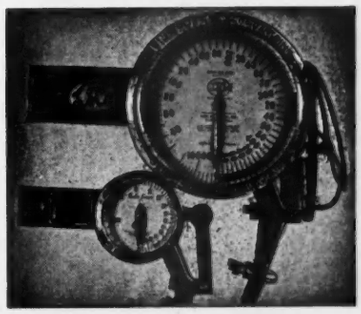

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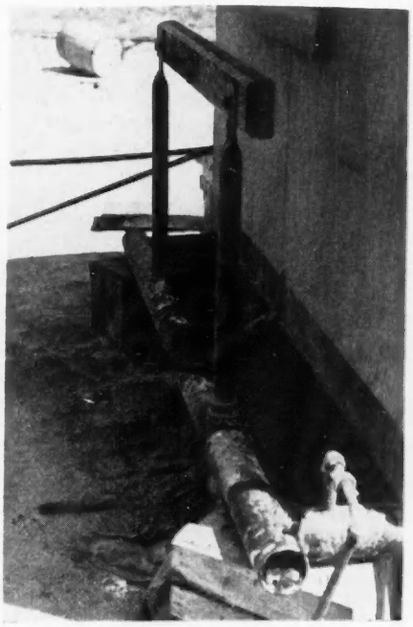
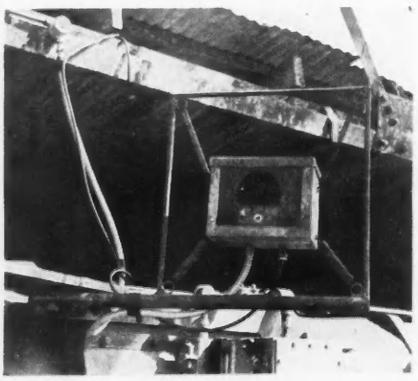
Saw-Filing Rack Attached to Dog House Base

TOOL CARE

The importance of keeping the rig saws in sharp, usable condition need not be minimized in spite of the extent to which steel has replaced wood in modern rig construction. A crew member of one major company, having the job of keeping saws used by his department sharpened, greatly simplified the task by erecting a saw vise on the back side of the dog house . . . a spot where he can attend to his filing, while at the same time keeping an eye on his other maintenance duties. Atop the horizontal pipe connecting the ends of the skid base of the dog house, he welded two fittings. In this instance, he used the two halves of a discarded union, into which were fitted two upright pipe posts of equal length. The supper ends of these posts were flattened and horizontal clamp boards bolted across the space as shown. Long enough to handle any rig saw, the clamping boards may be tightened merely by turning the nuts that are exposed on the front side of the unit.



Inter-Communication System Improves Driller-Derrick Man Coordination



RIG COMMUNICATIONS

Communication between the driller and derrick man is unsatisfactory even under the most ideal of conditions. Doing away with the old and generally unsatisfactory system, one major company has installed a two-way inter-communication system—one unit being installed just above the driller's controls and the other near the derrick man's position. The unit near the driller is suspended in a square enclosure by four coil springs which absorb the shocks of rig vibration. The installation is supported atop a horizontal pipe which is bolted to the upper part of the draw works. Protecting the box from exposure to steam, mud and oil, a sheet metal enclosure covers three sides of the unit, the lid being removable for repair or servicing.

Such an installation goes far toward not only improving communications, but in providing an element of safety in that orders or questions are not so likely to be misunderstood. In addition to smoothing out that phase of the work, ruffled tempers caused by misunderstandings are eliminated.

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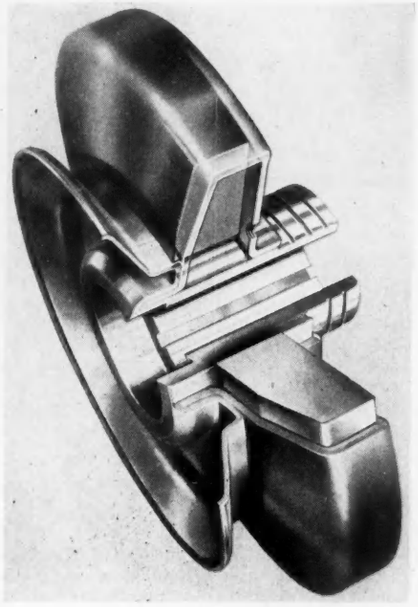
NEW EQUIPMENT LITERATURE

For additional information, use mailing card inserted opposite this page

1—Vibration Damper

The Houde Engineering Division of Houdaille - Hershey, Incorporated, has announced a new type of viscous torsional vibration damper for internal combustion engines which, it is claimed,



solves torsional vibration problems ideally Special features of the damper are its simplicity and the fact that it is untuned and therefore minimizes both major and minor critical orders of vibration. The manufacturers claim it will outlast the engine without maintenance or service.

There are two parts that go into the construction on this new damper: the damper mass and its housing. The viscous substance employed is the newly-developed Silicone fluid, chosen for its inherent stability and its nearly flat viscosity curve which permits constant operating characteristics regardless of temperature ranges or changes. The housing is hermetically sealed to retain the fluid indefinitely. It is pointed out that this device is a true damper and not a detuner.

(Check item 1 on coupon for more information.)

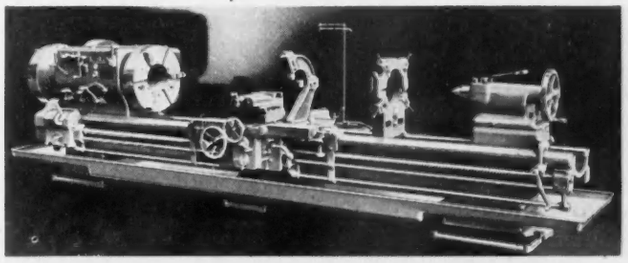
2—Mud Additive

A new mud additive for oil well rotary drilling has been announced by Phillips Petroleum Company. This newest research development of the company involves use of water soluble cellulose derivatives which are claimed to impart desirable characteristics to drilling muds never before achieved. The improved product is reported to have undergone intensive field tests. The company's experience indicates this new type mud will permit very substantial savings in the cost of well drilling, particularly in areas where anhydrite, salt or heaving shale must be penetrated.

(Check item 2 on coupon for more information.)

3—Lathes

All hollow spindle (oil country) lathes manufactured by The R. K. LeBlond Machine Tool Company are now offered with hardened and ground steel ways both front and rear as standard equipment. LeBlond's line of hollow spindle lathes consists of 16, 18, 27 and 30-inch sizes. All are fitted with the replaceable strips which are flame - hardened to 62-65 Rockwell C (over 600 Brinell) in the company's own process.



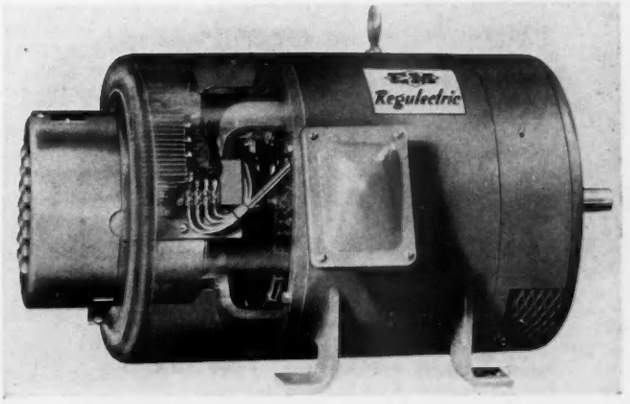
Before the sections are keyed to the bed ways, they are given a stress-relieving draw at 400° F. to eliminate any tendency to twist or break under sudden loads. Suspended throughout the structure of the steel are free graphite particles which absorb oil and set up what is for all practical purposes a self-lubricating system.

(Check item 3 on coupon for more information.)

4—Generator

The newly-developed "Regulectric" a-c generator, made by Electric Machinery Manufacturing Company for use in engine generator sets, provides general-purpose electric power at constant voltage.

It contains a built-in voltage regulating circuit employing the principle of series-resonance. The generator is said to maintain voltages within 2 percent of its rated value from no load to full load with normal engine speed regulation, and is claimed to be instantly responsive to sudden load changes. Operation of the voltage regulating circuit is purely electrical, responding quickly to maintain high voltages for starting motors. The new generator is now built in ratings from five to fifteen kilowatts, single phase or triple phase, all 60 cycle.



(Check item 4 on coupon for more information.)

5—Battery Charger

The Hartman Corporation of America announces production of a small rapid battery charger combining light weight, portability and compactness. Known as the "Super 80," it derives its name from the fact that it has an output of 80 amperes, weighs 80 pounds, and has 80 feet of a.c. cable which allows a large radius of action from any electrical outlet. Other features include a heavy duty rectifier; double handles, for easy lifting; rubber tired eight-inch wheels, and swivel caster; large "quick-read" 0-100 ammeter; automatic time switch; and specially designed, heavy duty, bronze plyer-type battery clamps with serrated jaws and insulated hand grips.

(Check item 5 on coupon for more information.)

6—Metal Cleaner

"Liquid Honing," the process of deburring, finishing, polishing or cleaning metal parts by directing a high-velocity stream of abrading material mixed with a chemical emulsion, has been developed

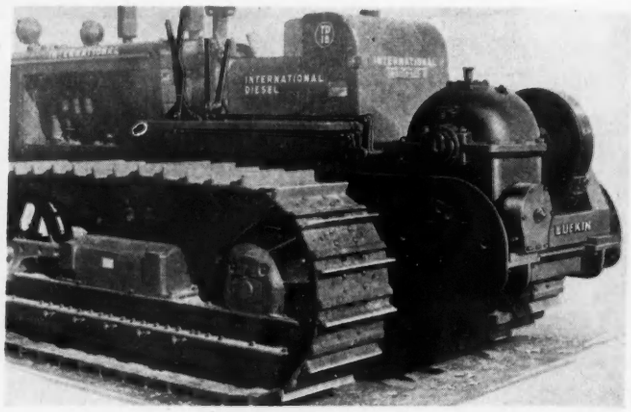
by Vapor Blast Manufacturing Company. The Junior B-20 model illustrated is one of two standard-make units, the other being a dual cabinet model for two-stage operation. There are three essential pieces that make up the liquid honing unit: the cabinet, where metal parts may be sprayed by hand or mechanically controlled for production line work, a source of compressed air which furnishes the required pressure, and the abrasive emulsion. The cabinet protects the operator from the spray and permits the collection and recirculation of the abrading material. Depending on the type of work desired, the abrasive agent is available in sizes ranging from 40 to 5000 mesh. This abrasive, Novaculite rock, is mixed in varying proportions with a chemical rust inhibitor and water, and discharged from the nozzle at a velocity of 3200 feet per second.

A high degree of accuracy is claimed for the fine abrasives. Parts have been polished to tolerances less than .0001 inch. In one test, it was found that test bars polished by the liquid honing method showed 5 to 10 percent increase in strength over similar bars polished by hand.

(Check item 6 on coupon for more information.)

7—Truck, Tractor Winches

A new line of truck and tractor winches have been added to the Lufkin Foundry & Machine Company products. In truck winches, two sizes are offered, the 15,000-pound line pull model and the 30,000-pound line pull model. First in the tractor winches is a Model 60, rated at 60,000-pound line pull and a Model 125, an extra heavy duty winch rated at 125,000-pound line pull. Oversize worm gears of special heat treated gear bronze are used, and are "run in" with the heat-treated alloy steel worm before shipment.



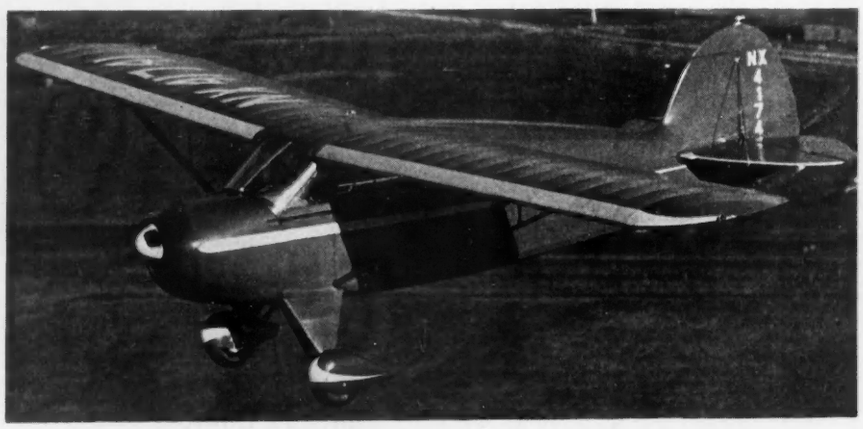
A tapered-tooth drum clutch is a feature which is said to engage and disengage easier and cannot slip under load, for as the load increases, the grip tightens. The tractor winches feature, in addition to special worm gear and drum clutch, a two-speed forward and two-speed reverse transmission using heat treated alloy steel herringbone gears. All shafts are said to be mounted on anti-friction bearings and contain oil and grease seals throughout. An automatic safety brake insures against the line slipping under load, while a main drum brake adds to the versatility of operation.

(Check item 7 on coupon for more information.)

8—Plane

The Funk Brothers in partnership with the Jensen Brothers under the name of the Funk Aircraft Company and are producing a new lightweight passenger plane. Its landing speed of 37 miles per hour allows a landing in a relatively small field, perhaps next to a remote wildcat or production lease. Its quick take-off and 1000-foot per minute rate of climb at sea level enables it to get out of small fields as well as onto them. The plane is said to be designed to resist stalls and spins, yet retains its maneuverability. Ground handling is aided by a sterable, swivel, tail wheel and improved hydraulic landing gear.

The Funk "Bee" is powered with an 85 horsepower Continental engine which is claimed to give better than 20 miles to the gallon under normal cruising conditions. It has a rated cruising speed of 100 miles per hour with a top speed of 116 miles per hour. Features include quick-detachable landing lights, which can be carried in the baggage compartment when not in use, a dome light, handsome upholstery, illuminated instrument panel.



(Check item 8 on coupon for more information.)

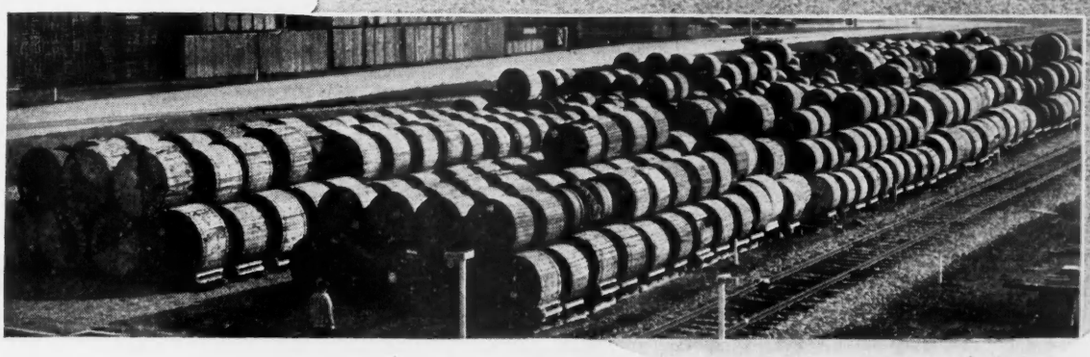
9—Portable Rig

Development of an improved truck motor driven, portable rotary drilling rig, capable of drilling to 5000 feet, is announced by Franks Manufacturing Corporation. The Model T-4000-ACL has been designed primarily for transport in areas where there are no roads or the terrain is rugged. A number of the rigs have been exported for use in localities where road development is poor.

The giant unit is equipped with power steering, and features a half-track, crawler-type rear end. It is 100 percent portable and is said to negotiate the roughest terrain. The complete unit in-

For Quick Sale . . .

ELECTRIC WIRE AND CABLE



The War Assets Administration has a large inventory of government surplus Wire and Cable. It was made by leading manufacturers for war purposes under close supervision to exact technical specifications.

Some of the types and sizes are standard and conform to underwriters' code. Others, while non-standard, are adaptable to a wide variety of uses.

Some suitable applications are circuits for:

power and light, radio, telephone and signalling,
ignition and control, plus battery charging,
instrument and switchboard wiring, welding, etc.

Priced far below its acquisition cost, it will appeal to construction contractors, oil well and mine operators, and ship builders. Ingenious engineers will find many ways to use this material to their advantage.

Get in touch with your nearest Regional Office of the War Assets Administration. Special technical personnel will be happy to give you data on specific types and sizes or arrange for your inspection of the material.

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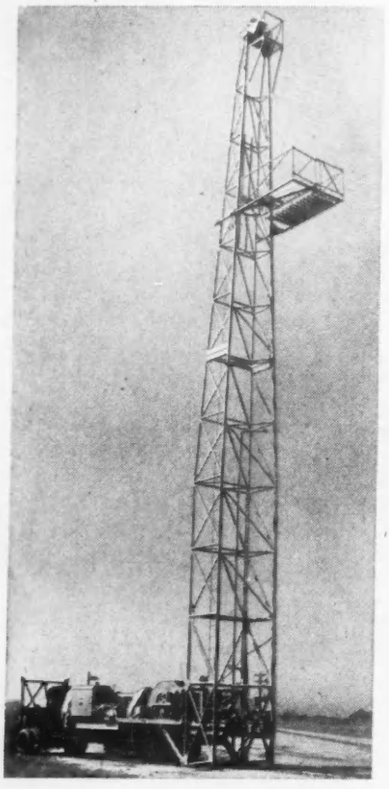
319-2

VETERANS OF WORLD WAR II: To help you purchase surplus property, a veterans' unit has been established in each WAA office

cludes derrick, rotary table, two slush pumps, draw works, and two-engine power plant with facilities for compounding, all unitized and mounted on one truck. The 150,000-pound capacity derrick folds down on the truck for



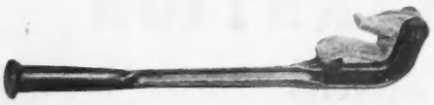
over-the-road moving. It is so designed that blocks remain strung, tongs hung, and pumps and draw works hooked up during moves. Even pump suction and discharge manifolds are integral parts of the unit.

The unitization of all components on one truck eliminates most of the rig-up and tear-down ordinarily required. Because it is 100 percent portable it moves rapidly from location to location. Since the derrick is an integral part of the unit, the cost of erecting and maintaining the conventional type derrick is eliminated.

(Check item 9 on coupon for more information.)

10—Snap Wrench

The S. M. Jones Company announces a new snap wrench for tightening sucker rod joints. Specially designed and engineered to assure maximum tightness of pins and couplings, this new wrench



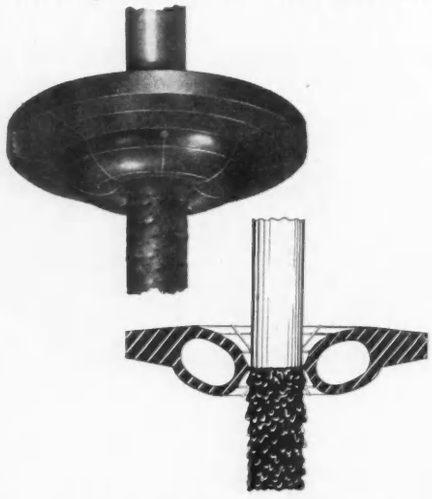
delivers an extra "wallop" in bucking up joints. Its "straight line" construction, from pivot pin in head through center of rod to lever arm, is said to assure maximum wrench torque plus great "shock or impact" in driving home joints. As a result of these advantages it is claimed that the service life of sucker rods can be materially increased. Rugged construction features include drop-forged, heat-treated, alloy steel jaw; cast alloy heat-treated handle with weighted end to give more punch in bucking up joints; less fatigue and no "sting."

These new wrenches are available for 5/8, 3/4, 7/8, and 1 inch A.P.I. sucker rods, with handle lengths of 12, 14, 16, 19 inch and weights of 4, 6½, 7 and 10 pounds respectively.

(Check item 10 on coupon for more information.)

11—Pipe Wiper

An all-rubber pneumatic pipe wiper manufactured by Bettis Rubber Company embodies a number of new features in design and construction. The center portion of the wiper that fits



around the drill pipe is a thick-walled, low pressure air cell with a self-sealing valve. When wear occurs in the pipe aperture, air is added to compensate. This air-cushion feature, it is explained, enables the wiper to absorb shocks like a low-pressure tire.

The Bettis pneumatic wiper is made entirely of oil-resistant rubber compound. There is no metal in its construction. It fits snugly around the drill pipe, but expands readily when passing tool joints or protectors. The manufacturers assert that the wiper not only does a thorough wiping job, but also eliminates the danger of fire from sparks caused by metal-to-metal contact and friction. Sizes for both drill pipe and tubing are available.

(Check item 11 on coupon for more information.)

Literature

12—Power Unit

A new brochure describing an auxiliary combination power unit has just been released by Stewart & Stevenson Services. The booklet tells how a rig lighting plant, electric welder accessory drive for wash down pump and air compressor unit have been engineered and built into one compact, movable unit. A large picture of the unit is shown on the inside of the folder, with ten attractive features pointed out and explained. Back page of the brochure lists engineering data and specifications for the unit.

(Check item 12 on coupon for more information.)

13—Pumping Unit

Oil Well Supply Company has issued four bulletins of notebook size. Bulletin U15-1245 concerns descriptions, engineering data and illustrations of the company's TC-28 two twin-crank pumping unit. Features of the standard equipment of this product are presented along with specifications and outline drawings in black and white. Counterbalancing effect data are given on the last of the four pages. Oilwell's 18-P power slush pump is the subject of Bulletin P-16-1145. Engineering data are presented, such as theoretical capacity and horsepower requirements. Specifications and outside dimensional drawings are included.

In similar form, bulletin R5-1245 presents selective information about Oilwell's 17½-A and 17½-B oilbath rotaries. Complete descriptive matter is given along with photographs of both units. Specifications and drawings for the 17½-A rotary are listed. Bulletin E2-446 describes and illustrates the Witte horizontal gas-gasoline engine. In addition to a brief specification of the equipment, a picture breakdown of the essential parts is given. An outline drawing is shown on the last of the four pages.

(Check item 13 on coupon for more information.)

14—Gage

The only pressure gage with the Helicoid movement is explained in a 16-page catalog released by Helicoid Gage Division of American Chain & Cable Company, Inc. Cutaway photographs and line drawings show the line of Helicoid gages, how they work, what goes into them, how they are put together, and the reason they are accurate. In addition, the catalog contains information on Korex Bourdon tubes used in Helicoid gages, the hairline pointer adjuster, fused joints in Helicoid gages, and line-up of standard dials.

(Check item 14 on coupon for more information.)

15—General Equipment

A 48-page general catalog has been issued by McEvoy Company. Printed in three colors to fully illustrate the intricate operations and make it possible to tie up each quarter section and cross-section wash drawing, the catalog contains more than 200 illustrations. The catalog is divided into three sections, giving complete specifications together with pressures, weights, and other information needed by the buyers. To enable buyers to evaluate McEvoy products, the practical benefits and advantages of each, together with field instructions are set forth in the descriptive matter. The reading material is broken up into easily read paragraphs, with lead-in headings in bold face type enabling the reader to quickly spot important points.

(Check item 15 on coupon for more information.)

HOT WEATHER'S Coming

can your engines take it?

Keeping an engine at proper operating temperature in hot weather involves more than just a larger radiator and a fast revolving fan. If the engine isn't basically designed for stationary operation, it can't give maximum efficiency in hot weather on pumping installations.

ALLIS-CHALMERS ENGINES are slow speed, high torque tractor type, built to stand continuous operation on stationary installations in the hottest weather because:

- **Engine blocks have extra large water capacity.**
- **Large capacity impeller type water pump maintains proper circulation.**
- **Entire cylinder walls are surrounded by circulating water.**
- **Exhaust valves are almost completely surrounded by water.**
- **Water circulates to and cools first the areas subject to most heat.**

These features add years of trouble free performance to the life of A-C engines. Such performance is directly reflected on the cost sheets of thousands of wells.

A Cooper power engineer will be glad to furnish you with specifications of the Five Engine sizes.

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Runs to Refinery Stills Mount As Production Drops for the Week

Crude oil production during the week ended June 22 was cut back slightly, while runs to refinery stills were boosted over the previous week.

Output of gasoline and residual fuel oil dropped moderately during the week, while distillate fuel production showed some increase. During the seven day period gasoline stocks were reduced by more than half a million barrels, and light and heavy fuel oil stocks accumulated nearly 1½ million barrels. These trends were revealed in the latest weekly report of The American Petroleum Institute.

Crude oil production in the U. S. averaged 4,950,000 barrels daily during the week, a decrease of 11,000 daily from the previous week's record breaking output. This current daily output tops the average of last year's comparable week by 52,000 barrels, or 1.1 percent.

Crude runs to stills increased 37,000 daily over last week's runs to average 4,836,000 barrels daily, which are 231,000 barrels under the daily runs of the like week of last year.

Stocks of refinable crude stood at 220,106,000 barrels on June 15, according to the latest stocks report of The U. S. Bureau of Mines. This report shows that 1,517,000 barrels were added to stocks during the preceding seven days, but that the total on hand is 1,826,000 barrels less than was held one year before. These figures do not include 4,783,000 barrels of heavy, non-refinable crude oil held in California.

Gasoline production, including natural blends, during the week totaled 14,271,000 barrels, a decrease of 239,000 barrels from last week, and 929,000 barrels less than was produced during the comparable period of last year. Stocks of finished and unfinished gasoline were reduced 555,000 barrels during the seven day period, and now total 92,894,000 barrels, a new low mark for this year. These stocks of gasoline exceed those in storage a year ago by 5,795,000 barrels.

Distillate fuel oil output amounted to 5,592,000 barrels for the period, showing an increase of 145,000 barrels over last week, and 486,000 barrels over last year's week. Stocks of this light fuel oil were increased 838,000 barrels during the seven days to bring them up to the year's high of 36,420,000 barrels. There were 4,726,000 barrels less of this fuel on hand a year ago than at the present time.

This week's production of residual fuel oil decreased 225,000 barrels from last week to total 8,706,000 barrels, which is 1,097,000 barrels less than the output of the like week of war-time 1945. Additions of 611,000 barrels were made to stocks of this burning oil, bringing them up to 46,526,000 barrels and a new high mark for 1946. These currently held stocks top those in storage at this same time last year by 6,361,000 barrels, or 15.8 percent.

Magnolia Starts Plant

Magnolia Petroleum Company has started foundation work for the installation of a 15 million cubic foot daily capacity absorption type natural gasoline plant in the West Ranch field, Southwest Texas. The residue gas from this plant will supplement the dry gas produced in the multi-pay field by the company in supplying fuel for its Beaumont refinery through a direct 194-mile combination 14- and 16-inch carrier.

Stripper Subsidy Changes Are Announced by OPA

OPA last week added four new pools to the subsidy list, effective from June 1, as follows:

Friendsville pool, Wabash County, Illinois, 35 cents per barrel; Mt. Carmel, Wabash, Illinois, and Knox, Indiana, 20 cents; De Soto, Red River, Louisiana, 30 cents; and Koopman, Jim Wells, Texas, 20 cents.

OPA also revised the increase for the Keensburg Consolidated pool, Wabash County, Illinois, to be 25 cents per barrel; deleted the 25-cent increase previously granted Edwards pool, Crane County, Texas, and redesignated the Earlsboro pool, Seminole County, Oklahoma, to be in both Seminole and Pottawatomie counties.

Trends of Operations and Changes in Stocks

Figures on crude stocks are from Bureau of Mines weekly reports; all others from American Petroleum Institute weekly reports, which are estimates on Bureau of Mines basis.

(All figures in thousands of barrels—add 000)

HIGHS AND LOWS OF RECENT YEARS

ITEM	Crude Oil Prod. Barrels Daily	Crude Oil Prod. Week Ended	Runs to Stills Barrels Daily	Runs to Stills Week Ended	Crude Stocks Barrels	Crude Stocks Week Ended	Gasoline Stocks Barrels	Gasoline Stocks Week Ended	Gasoil and Distillate Stocks Barrels	Gasoil and Distillate Stocks Week Ended	Residual Fuel Oil Stocks Barrels	Residual Fuel Oil Stocks Week Ended
Highs:												
1941	4,337	11–22	4,120	10–18	266,187	3–29	99,727	3–29	[5]54,983	11–15	102,448	1– 4
1942	4,337	2– 7	3,961	1– 3	263,208	3–28	[1]109,281	3–14	47,861	11–14	95,857	1– 8
1943	4,436	11–13	4,331	12– 4	245,752	5–29	94,159	3–20	47,187	11–27	72,881	1– 2
1944	4,762	9–30	4,798	12–30	240,992	1– 1	89,162	4– 1	48,162	10–28	64,744	10– 7
1945	4,944	7–21	[5]5,140	8–18	227,554	10–13	99,012	3–24	45,341	11–17	56,074	1– 6
1946	[1]4,961	6–15	4,857	5–25	229,430	3– 2	105,233	2–16	36,420	6–22	46,526	6–22
Lows:												
1939	[3]1,601	8–26	3,125	2–18	[2]229,127	10–12	71,152	10– 7	20,722	4–15	105,397	4– 3
1941	3,364	1–11	3,490	1–18	240,399	11–15	79,923	10– 4	28,382	4–12	90,914	7–13
1942	3,297	7– 4	3,393	5–23	231,896	12–12	75,934	12– 5	29,240	4–25	72,962	12–26
1943	3,821	1– 9	3,579	3–18	232,191	1– 9	68,182	10–16	30,732	4– 3	57,596	12–25
1944	4,357	1– 1	4,228	2–12	220,258	9– 9	76,302	1– 1	30,232	4–19	49,737	3–18
1945	3,621	10– 6	3,409	10– 6	[4]211,813	8–25	70,791	10–13	26,483	3–17	38,548	5–26
1946	4,403	3– 9	4,498	1–12	218,193	1– 5	92,894	6–22	25,131	3– 9	37,289	4– 6

TRENDS OF 1945 AND 1946

Trends in Week Ended	Crude Oil Production Daily	Crude Oil Runs to Stills Daily	Crude Oil Stocks Week End	Gasoline Production Weekly	Gasoline Stocks Week End	Gasoil and Distillate Production Weekly	Gasoil and Distillate Stocks Week End	Residual Fuel Production Weekly	Residual Fuel Stocks Week End
1945:									
January 27	4,727	4,756	221,310	14,957	88,223	4,843	33,561	9,252	51,119
February 24	4,777	4,803	219,351	15,500	95,972	4,958	28,753	9,084	46,713
March 31	4,781	4,677	223,782	14,644	98,758	4,548	26,889	9,184	41,745
April 28	4,805	4,780	223,474	14,633	94,068	4,636	28,273	9,379	39,813
May 26	4,887	4,950	222,831	15,194	89,121	4,667	29,184	9,670	38,548
June 30	4,903	4,999	220,781	15,546	86,472	4,910	32,213	9,077	40,488
July 28	4,930	4,996	218,507	16,106	86,008	4,598	36,071	9,588	42,283
August 25	4,892	4,931	[4]211,813	15,986	84,693	4,960	39,782	9,356	46,201
September 29	4,357	3,812	222,387	11,913	79,552	3,940	43,689	7,047	46,853
October 27	4,273	4,838	224,230	15,530	74,335	5,159	43,472	8,691	45,943
November 24	4,469	4,648	219,363	15,681	83,184	4,802	45,258	8,800	47,474
December 29	4,474	4,729	218,918	14,546	95,205	5,055	36,651	8,765	42,447
1946:									
January 5	4,548	4,651	218,193	14,488	98,494	5,293	35,199	8,867	42,371
January 26	4,626	4,553	220,544	13,622	101,737	5,720	29,498	8,411	39,722
February 23	4,714	4,595	226,699	13,175	104,709	5,728	25,398	7,913	39,290
March 30	4,425	4,684	224,994	13,896	104,715	5,357	28,240	8,738	37,746
April 27	4,672	4,685	224,443	14,228	99,631	5,568	30,466	9,204	39,404
May 25	4,759	4,857	222,214	14,322	95,769	5,463	32,973	8,908	43,368
June 1	4,756	4,843	220,885	14,293	95,247	5,070	33,172	8,881	44,408
June 8	4,896	4,827	218,589	13,864	94,146	5,441	33,958	9,015	45,938
June 15	[1]4,961	4,799	220,106	14,510	93,449	5,447	35,582	8,931	45,915
June 22 1946	**4,950**	**4,836**	.....	**14,271**	**92,894**	**5,592**	**36,420**	**8,706**	**46,526**
June 23, 1945	4,898	5,067	[5]221,932	15,200	87,099	5,106	31,694	9,803	40,165
Change:									
In Week	—11	+37	+1,517	—239	—555	+145	+838	—225	+611
In Year	+52	—231	—1,826	—929	+5,795	+486	+4,726	—1,097	+6,361
In Year	+1.1%	—4.6%	—0.8%	—6.1%	+6.7%	+9.5%	+14.9%	—11.2%	+15.8%

[1] All time peak. [2] Lowest between January, 1922 and July 1, 1944. [3] Lowest since October, 1922 due to shutdown of six Mid-Continent states. [4] Lowest since December, 1921. [5] Stocks, June 16, 1945.

☆ Oklahoma

Shallow Field May Be Opened Near New South Walters Area

Cotton County may have new shallow field; Keyes sector has another good producer; Inola grass root pool extended; Oklahoma's first triple-zone completion is in Grady County; Schafer quits Caddo outpost; Gulf makes lease plays in 4 counties; Magnolia to deepen Chitwood test; Pawnee County wildcat looms as pool opener.

Cotton County: Possibilities that R. B. Farris' Indian 1, NW NW SW 1-4s-11w, may open a shallow field south of the new South Walters area were increased when the test made good showings. The wildcat is bottomed in sand around 1400-1500 feet, and pump is now being installed for initial tests.

Cimarron County: The Pure Oil Company is completing its fourth oil producer in the new Keyes field of northeastern Cimarron County, Oklahoma Panhandle, which is the 14th operation for the field. McKirahan 2, NE NW NE 13-5n-7eCm, which was drilled to 4865 feet, with pipe set at 4849 feet, was showing for an estimated 100 barrels of oil per day. The McKirahan 1, NE NE NE, continued to swab and clean out, showing a little oil at 5885 feet, total depth.

Rogers County: The Southwest Inola pool has been given a 2½-mile northeast extension by A. T. Campbell's Fee 1, CE½ SE 18-19n-17e. Bartlesville-Dutcher pay was found at 387 feet, and 2 feet in the formation the well made 1 million cubic feet of gas and showed a little oil. Good oil saturation was noted in the cuttings.

Grady County: What is believed to be Oklahoma's first triple-zone completion has been recorded with Anderson-Prichard Oil Corporation et al's McCaughtry 1, NW NW NW 35-5n-8w, Chickasha field. The well was drilled to 5797 feet, and the Glover sand was found at 4565-90 feet, where 5,150,000 cubic feet of gas was gauged in 24 hours through ½-inch top and bottom hole chokes, with pressure 1350 pounds; the Charlson sand was had at 4856-4960 feet, and gauged 3,750,000 cubic feet of gas through same sized chokes, with the same pressure. The Pooler sand was found at 5288-404 feet, where 6,175,000 cubic feet of gas was gauged through same sized chokes, with pressure 1950 pounds.

Caddo County: Henry Schafer, Inc., Oklahoma City, apparently is writing finis to a long, expensive wildcatting venture and was abandoning Cook 1, NE SE NE 35-5n-9w, south of the east end of the Cement field. The wildcat was spudded in October, 1943, drilled to 6668 feet and temporarily abandoned in January, 1944. Work was resumed in November, 1944, and 1800 feet of 9-inch pipe was set. The company moved in its new drilling rig, and Medrano sand was found at 8830 feet, with saturated zone at 8860 feet; salt water at 9107 feet, and base of sand at 9150 feet. The hole was carried to 9200 feet and 5½-inch pipe was set at 9150 feet. A series of perforations and testing continued until recently, when pipe and tubing collapsed at around 4000 feet while engineers were trying to knock out a mud block behind the pipe, with pressure. It is reported that only about 2400 feet of casing and the same amount of tubing were recovered, and that the venture has cost approximately $500,000.

Cimarron-Dewey-Harper-Texas counties: Gulf Oil Corporation, apparently centering its attention in the Panhandle-Western Oklahoma area, has increased its large leaseholds in the area by purchasing 23 tracts at a recent State School Land Commission sale. In Cimarron County, the company paid top prices for tracts in 31-2n-1eCm, in the southeast corner of the county, thus augmenting a large spread already secured in the area, extending across the lines into Texas and New Mexico. In Dewey County the company purchased tracts in 17n-20w; in Harper County, tracts in 26n-25w, near Lavern, and in Texas County, tracts in 1 and 2n, 18eCm, east of production in the Guymon-Hugoton area. This is indicative of coming operations in the panhandle area, which is a part of the huge Hugoton gas field.

Chitwood area: Magnolia Petroleum Company, which has drilled Spiers 1, CSW SW 28-5n-6w, to 11,395 feet, will drill the test still deeper by 200 feet. The test is ¾-mile northwest of the Chitwood area, near Alex. Perforated at 11,136-170 feet, the test on a 5-hour drill-stem test at 11,110-190 feet recovered 10,300 feet of salt water and 500 feet of drilling mud.

Pawnee County: Looming as a prospective pool opener is Paul R. Nagle's Whaley 1, NW NW SE 15-23n-5e, southeast of Ralston. On upper zones the test is reported checking 25 to 30 feet higher than a wildcat drilled several years ago in Sect. 22, and several good shows of oil and gas have been noted. Nagle, Oklahoma City operator, expects to test the Prue sand at around 2800 feet, and the Bartlesville sand.

Wells Completed in the United States in Week Ended June 29, 1946

Data preliminary and subject to revision. Revised and more complete data on all completions shown in monthly summary of drilling, published in second or third issue of each month. More detailed data on wildcats published in third or fourth issue of each month.

State or District	FIELD COMPLETIONS: New Wells *Oil	Gas	†Input	Dry	Total	Old Wells Deepened	WILDCAT COMPLETIONS: *Oil	Gas	Dry	Total	ALL COMPLETIONS: This Week	Last Week	Cumulative: This Year	Last Year
Alabama	....	....	....	....	....	....	....	....	1	1	1	....	8	16
Arizona	....	....	....	....	....	....	....	....	....	....	....	....	1	....
Arkansas	4	....	....	1	5	....	....	....	3	3	8	2	89	85
California	27	1	....	....	28	4	....	....	4	4	36	36	945	1,063
Colorado	7	....	....	....	7	....	....	....	1	1	8	5	64	12
Florida	....	....	....	....	....	....	....	....	....	....	....	1	11	9
Georgia	....	....	....	....	....	....	....	....	....	....	....	....	2	4
Illinois	35	....	....	13	48	....	4	....	5	9	57	29	991	822
Indiana	2	....	....	2	4	....	....	....	....	....	4	8	208	150
Iowa	....	....	....	....	....	....	....	....	....	....	....	....	....	1
Kansas	17	8	1	13	39	3	1	....	5	6	48	36	1,013	777
Kentucky	10	....	....	2	12	....	....	....	....	....	12	5	274	231
Louisiana	16	2	....	3	21	....	2	....	7	9	30	18	629	492
North Louisiana	11	2	....	2	15	....	....	....	5	5	20	8	334	159
South Louisiana	5	....	....	1	6	....	2	....	2	4	10	10	295	333
Michigan	6	1	....	8	15	....	....	....	3	3	18	30	368	376
Mississippi	3	1	....	1	5	....	1	....	1	2	7	9	118	188
Missouri	....	....	....	....	....	....	....	....	....	....	....	....	12	21
Montana	5	....	2	4	11	....	....	....	1	1	12	13	124	96
Nebraska	....	....	....	....	....	....	....	....	....	....	....	....	....	2
New Mexico	3	2	....	....	5	1	....	....	1	1	7	9	200	225
New York	15	....	10	....	25	....	....	....	....	....	25	25	537	517
Ohio	6	11	....	11	28	....	....	....	....	....	28	13	540	436
Oklahoma	26	5	3	17	51	3	....	....	....	....	54	43	1,227	1,161
Oregon	....	....	....	....	....	....	....	....	....	....	....	1	2	....
Pennsylvania	27	4	15	2	48	1	....	....	....	....	49	46	1,504	1,447
Tennessee	....	....	....	....	....	....	....	....	....	....	....	1	3	2
Texas	109	4	2	30	145	3	5	....	20	25	173	173	4,007	3,589
E.Tex.Bor. Co.'s	4	....	....	....	4	....	....	....	1	1	5	3	78	34
Rest of E. Texas	8	....	....	1	9	....	....	....	2	2	11	8	269	109
North Texas	27	2	2	20	51	1	1	....	4	5	57	59	1,187	828
W. Central Tex.	5	1	....	2	8	....	....	....	3	3	11	9	293	232
West Texas	34	....	....	2	36	1	1	....	1	2	39	27	818	936
Tex. Panhandle	3	....	....	....	3	....	....	....	....	....	3	6	201	288
G. Coast, Upper	7	1	....	1	9	....	1	....	2	3	12	12	338	354
G. Coast, Lower	17	....	....	2	19	1	1	....	3	4	24	35	550	512
Southwest Texas	2	....	....	2	4	....	....	....	2	2	6	12	203	249
S. Central Tex.	2	....	....	....	2	....	1	....	2	3	5	2	70	47
Utah	....	....	....	....	....	....	....	....	....	....	....	....	2	....
Washington	....	....	....	....	....	....	....	....	....	....	....	....	1	....
West Virginia	3	16	....	....	19	....	....	....	....	....	19	16	356	386
Wyoming	5	1	....	1	7	....	....	....	....	....	7	5	78	64
Total U. S.	326	56	33	108	523	15	13	....	52	65	603	524	13,314	12,172

* Includes distillate wells. † Includes salt water disposal wells.

☆ Kansas

Trego County Gets Discovery Six Miles from Arnold Pool

Trego County strike opens oil pool; Hoisington pool extended a mile south; Marion County gets gas pool; Skelly's Boggs looming as pool opener.

Trego County: Republic Natural Gas Company's Hille 1, SE SE SW 23-15-24w, 6 miles northeast of the Arnold pool of Sheridan County, has apparently opened a new pool. In a 6-hour swabbing test from the Mississippi at 4293-4316 feet, the well produced 39 barrels of oil and is now being put on pump.

Barton County: Extension of the Hoisington pool approximately a mile south has been accomplished by Black-Marshall's Klug 1, SE SE SE 28-17s-13w. Lansing was topped at 3193 feet, and Arbuckle at 3414 feet. Five-inch casing was run to 3416 feet, and the test was acidized with 1500 gallons at 3421 feet, total depth. The well pumped 40 barrels of oil per day, plus 25 percent water, and has been assigned a state potential of 52 barrels of oil a day.

Marion County: A gas pool has been opened by Anderson-Prichard Oil Corporation's Warkentine 1, SE SE NW 27-19s-1e, on the west edge of the town of Lehigh, 3½ miles from the McPherson County line. The well is making almost 15 million cubic feet of gas daily from the Mississippi lime, topped at 2806 feet, and a good show of oil was logged in the lower section of the pay. Total depth is 2828 feet.

Barber County: Looming as a pool opener is Skelly Oil Company's Boggs 1, SW NE NE 17-33s-15w, 2 miles east of Medicine Lodge gas field. The well was drilled to 4831 feet, where it flowed 15 barrels of oil and showed 400,000 cubic feet of gas in 10 hours. Drilled to 4844 feet, the hole filled with 1200 feet of oil after a shot with 80 quarts. Operators are now cleaning out the hole, preparatory to testing.

Missouri

Todd & Leuhring et al's Benson 1, 1500 feet east and 220 feet south of NWc 30-55n-29w, Caldwell County, has been shut down at 1000 feet. Mississippi lime was topped at 940 feet, and no shows have been reported.

☆ Ohio

Lawrence County's Symmes Gas Pool Receives Extension

Symmes pool extended; White Clinton continues to produce in west Richville pool; large gas well noted in Salt Creek pool; 2 Hemlock Grove tests produce; Malta pool extender is failure.

Lawrence County: Ohio Fuel's D. A. Moulton 1 extended the Symmes gas pool ½ mile west. The sand, unusually thick, was drilled 26 feet in to 3157 feet and the well was tubed without being shot.

Stark County: White Clinton continues productive in a ¾-mile outpost of the Richville pool. William Pfeiffer's Charles Gans 1 drilled sand from 4237-65 feet which was shot and tubed.

Muskingum County: Wassen et al's Hattie Murphy 3 in the west part of the Salt Creek pool unexpectedly came in as a large gas well. An attempt will be made to drill through the sand and test.

Meigs County: Two edge wells along the south and southeast sides of the Hemlock pool were completed. Roy Proffitt's Miller 4 and Campbell & Walker's Nelson 1 were each good for 20 barrels.

Morgan County: Ralph Zook's Emma Gillespie 2, a south outpost of the Malta pool, was dry in the Clinton sand and showed only a trace of oil in the Medina sand.

☆ Illinois Basin

Pool Opener Reported in Cumberland County Area

Pool opener completed in Cumberland County; Marion wildcat testing McClosky; discovery looms in Wayne County; pipe set at White County wildcat.

Cumberland County: Central Pipe Line Company's Myers 1, SE NW SW 36-9n-9e, has been completed as a pool opener in Rosiclare lime at 2650-55 feet. The well pumped 27 barrels in 20 hours after 2500 gallons of acid.

Marion County: Sohio Petroleum Company's Hawkins 1, SE SE NW 29-1n-4e, four miles from Kell, bailed 31 barrels of oil in 24 hours during tests of McClosky lime at 2875-85 feet. Testing continues.

Wayne County: Deep Rock Oil Company's Ulysses 1, NE NW NW 30-1n-6e, swabbed 160 barrels of oil in the first 6 hours after drilling plug. Pay was encountered at 3150-55 feet in McClosky lime.

Pure Oil Company, heaviest lease holder in the eastern Illinois area, released 100,000 acres in Wayne County, starting a scramble by independents and smaller companies to purchase the more desirable tracts.

Pure was among the first major buyers in 1936 and placed thousands of acres under 10-year leases at 30 cents per acre. Leasing now calls for considerably more than the original Pure price, and some operators foresee a lively drilling campaign in the area.

Shelby County: Four Shelby County wildcat abandonments darken the outlook where a large drilling campaign was predicted for this year. The failures were The Texas Company's Mietzner 1, SW SW NE 5-9n-5e, abandoned at 2214 feet; C. B. Mansfield's Doner 1, NE SW SW 7-10n-3e, abandoned at 1732 feet; A. J. Hammer's Smith 1, NE SE NE 18-9n-5e, abandoned at 1510 feet; National Consumers' Stewardson 1, SW SW NE 16-11n-4e, abandoned at 2050 feet.

Clinton County: The Texas Company is drilling below surface pipe at Petes 1, SW SW NE 16-1n-4w, a wildcat 2 miles southwest of the Bartelso pool.

Horne Given Award

The Legion of Merit was awarded Admiral Frederick J. Horne, wartime Vice Chief of Naval Operations, last week for his outstanding service as a member and later chairman of the Army-Navy Petroleum Board.

☆ Michigan

Northeast Extension Indicated For Arenac County "Ribbon Pay"

Rayburn and McClanahan's State 4, SE NE SW 11-19n-3e, Arenac County, flowed oil by heads at an unreported rate from a top Dundee dolomite pay at 2915 feet to indicate a northeast continuation of the prolific "ribbon wide" pay. It is the farthest northeast well drilled to date and 1½ miles from the well that started the extension development 2 years ago.

Montcalm County: E. V. Hilliard's Welch 1, NW SE SW 3-12n-8w, west offset to Sohio Petroleum Company's Cato discovery drilled this spring, carried only a show after perforating the Dundee-Monroe section from 3510-86 feet. It is the first test in the area since completion of the 50-barrel per day discovery.

☆ Rocky Mountain Area

Gas Discovery Is Testing in Rio Blanco County, Colorado

Gas discovery testing in Rio Blanco County, Colorado, southeast of Rangely; Wyoming wildcat discovery at East Bailey Dome preparing to complete; deep test in Converse County below 11,000 feet.

Colorado

A gas discovery was made by General Petroleum Company's Government 84, SE SE NE 15-2s-96w, at Piceance Creek southeast of Rangely in Rio Blanco County. Perforations at 3040-3120 feet swabbed dry and the well tested 4,350,000 cubic feet of gas per day. Testing will continue. Total depth of hole is 12,018 feet, plugged back to 3184.

Kiowa County: Union Oil Company of California et al's U.P.R.R. 1, C SE SE 17-17s-48w, Eads area wildcat, has recovered the fish and is drilling below 5500 feet.

Moffat County: Stanolind Oil & Gas Company's Madison sand test at Iles Dome, Madison 1, NW SW SE 22-4n-92w, is drilling below 5910 feet after testing sulphur water in the Weber sand, a productive zone at Rangely.

Montana

The Pure Oil Company's Northern Powder River Basin wildcat at Maxwell Buttes, State 1, C SW SE 36-2n-51e, Custer County, is drilling below 5775 feet. This well is 20 miles north of Stanolind's Mizpah area failure of a year ago, which drilled through the Big Horn to 8991 feet.

Wyoming

The East Bailey Dome wildcat reported to be of gusher proportions, Wasatch Refining Company et al's Unit 1, SWc 13-27n-89w, Carbon County, is still circulating oil to clean out after shot. Following shot the well flowed 100 barrels of oil in 1½ hours from Tensleep pay sand. There has been no increase in oil in the pits since the initial flow and the well is now cleaned out below 6830 feet. Total depth is 6972 feet, plugged back to 6940 feet.

Converse County: The Carter Oil Company's deep test, Unit 1, C SW NW

Two Model ME-66 MURPHY DIESEL 6 cyl., 6 x 6½" Engines, each rated 150 HP continuous, 180 HP intermittent, powering mud pump on Unit Rotary Drill Rig owned by Tex Harvey Oil Company

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19-33n-68w, south side of Powder River Basin, is drilling and coring below 11,575 feet, below the Frontier section and looking for the Muddy sand.

Big Horn County: Spence Dome, shallow oil field, yielded 2 completions, the Griffith group's Spence 6 flowing 135 barrels of oil a day from total depth of 550, after topping the Madison limestone at 448 feet; and Swartout's Spence 4, reporting an initial production of 150 barrels of oil a day from total depth 473 feet, after topping the lime at 430 feet. This field on the rim of the Big Horn basin is considered remarkable for its extreme economy of drilling operations. Most of the nearby oil fields are producing from horizons several thousand feet deeper, and some of the deepest wells in the Rocky Mountain region are drilling almost within sight of Spence Dome.

☆ North Louisiana

New Gas Well Extends Richland Parish Field

De Soto wildcat has show of gas; field extension in Richland Parish; Plain Dealing area's deep test still drilling, down 10,905.

De Soto Parish: A new Lower Pettit gas producing area may be opened soon if indications at Kerr-McGee Oil Industries' Nabors 1, C SW SE 28-12n-14w, materialize. A drill-stem test of section from 6176-88 feet recovered 10 feet of gas-cut mud and an unestimated amount of gas, without any formation water. Maximum working pressure was 400 pounds. The well is making hole around 6194 feet, still in the Pettit, and will be carried to the Travis Peak.

Richland Parish: R. T. Sellars Company's Burke 1, in SE SW 4-16-7e, came in a gasser, with 30 million cubic feet flow from 2540-44 feet, rock pressure 1082 pounds, total depth 3315 feet. This completion extended the Big Creek field about two miles northward.

Bossier Parish: Barnsdall Oil Company's Carter Burton 1, deep in 26-23-13w, Plain Dealing area, was drilling ahead below 10,905 feet.

Sabine Parish: Union Producing Company's Louisiana Long Leaf Lumber Company 1, deep test north of the Zwolle area, 29-8-11w, was drilling ahead in lime and sand streaks at 11,058 feet, with no important shows reported.

Jackson Parish: Shell Oil Company's Tremont Lumber Company 3, 21-15-1w, was drilling below 10,114 feet, after coring at 10,004 feet, with no results announced.

Caldwell Parish: Atlantic Refining Company's Louisiana Central Lumber Company 1, a wildcat, in 32-13-4e, was drilling below 7135 feet, without shows.

Franklin Parish: Sohio Petroleum Company's Rogers 1, 15-16-9e, a wildcat, was abandoned at 4688 feet.

Safety Award Received By Interstate Company

Employes and supervisors of two units of the Interstate Oil Pipe Line Company's Southern Division were recently awarded the Joseph A. Holmes Certificate of Honor for outstanding achievement in the field of industrial safety. The units are located at Melville and Bunkie, La.

☆ Mississippi

Hub Field Well Successfully Completed in New Pay Zone

Hub field well in Marion County successfully completed in new pay zone; successful field completions mount.

Marion County: Humble Oil & Refining Company's A. E. Ball 3, 20-2n-14e, Hub field, has been successfully completed to establish the state's first production from the Comanchean horizon. Casing was perforated at 10,098-106 feet and with packer at 10,019 feet the well flowed at the rate of 1,490,000 cubic feet of gas and 43 barrels of condensate per day. Gas-oil ratio was 35,000 to 1. A drill-stem test of the Massive sand, regular producing zone of the field, also yielded fair quantities of oil.

Clarke County: Sun Oil Company's Long Bell Petroleum Company's 2, NWc NE 17-2n-17e, wildcat, continued with core tests below 5415 feet. Tests of the Comanchean topped at 5221 feet have yielded fairly porous sand with varying quantities of salt water. No shows have been reported.

Lincoln County: The California Company's Mary Parnell-McDaniel 1, NEc SE 17-6n-8e, 10,000-foot test, is drilling below 7415 feet with no shows. California also has 3 wells going down in the active Brookhaven field with no shows. Furthest advanced of the three is the John Howard 1, NEc 8-7n-7e, which is drilling below 8179 feet. Sun's Leon Case 1, NEc 17-7n-7e, in Brookhaven, is also working below 6932 feet.

Claiborne County: Sun's W. R. Hammett 3, 15-11n-1e, which has revived operations in the Bruinsburg field, is drilling below 2098 feet. A drill-stem test at 1526-90 feet recovered mud cut with gas and had a slight blow before packer failed.

Franklin County: Gulf Refining Company's Ella G. Lees 5, SWc 32-7n-1e, Cranfield field, has been completed successfully with an initial production of 335 barrels of oil per day. Production is from the Massive sand zone at 10,308-318 feet.

Wayne County: Gulf's Lillie M. Johnston 2, SEc NE SW 34-10n-9w, Eucutta field, has made a good producer with an initial production of 35 barrels of oil per day with production from the Eutaw zone at 5208-23 feet.

Jefferson County: Humble's T. J. McGarry 1, SEc 15-9n-1e, is dry in the Fayette field, the first abandonment in several months. The well was drilled to 9821 feet and an attempt made to exploit the productive Massive sand zone at 9356 feet, but well showed no commercial potentialities.

Adams County: Humble's Adams County Board of Supervisors 1, SEc 47-6n-1w, wildcat, is running core test below 10,284 feet. Cores from 10,030-091 feet in the Marine Tuscaloosa recovered shale with no shows indicated. No shows have been reported at any point along the hole. In the Cranfield field California's A. M. Ratcliffe 9, 71-7n-1w, which is heading for horizons below present productive levels, is running core tests below 11,951 feet. Cores from 11,686-882 feet recovered sand and shale. No shows have been reported at any point along the hole.

Forrest County: The Superior Oil Company's Cassie Brandford 1, SEc SW NW 1-3n-13w, wildcat, is drilling below 9750 feet. No shows have been reported.

Yalobusha County: J. S. Henderson's Stone 1, NE SW 21-24n-6e, wildcat, has been abandoned as a duster at 3312 feet after running electrical survey. No shows were recovered.

Jeff Davis County: Gulf's D. C. Wigington 1, NEc SE NE 19-9n-18w, Gwinville field, has been successfully completed for a good gasser with an initial flow of 4,104,000 cubic feet of gas and 32 barrels of 50.8-gravity condensate per day. Casing was perforated at 8050-74 feet in gas sand above the Tuscaloosa zone and production established.

Florida

Rogers Lacy & Associates' Walton Land & Lbr. Co. 1, C SW SW 14-1n-18w, wildcat located 10 miles southeast of DeFuniac Springs, Walton County, is coring below 3900 feet, and has logged a good showing of oil in the basal Wilcox from 2340-70 feet. The test is in one of the most promising areas of the state. One previous test, about 2 miles west of the present one, was abandoned at 5800 feet.

Hernando County: Ohio Oil Company's Hernasco Corporation 1, NWc 19-23s-18e, wildcat, is drilling below 8379 feet.

Dixie County: Stanolind Oil & Gas Company-Sun Oil Company's Perpetual Forest 1, NW NW 5-11s-11e, wildcat, is drilling below 5932 feet.

Hillsborough County: Humble Oil & Refining Company's T. S. Jameson 1, NE NE 7-31s-22e, deep test, is drilling below 10,030 feet.

Osceola County: Humble's N. Ray Carroll 1, SE SE 10-27s-34e, is drilling below 7020 feet.

Monroe County: Gulf Refining Company's State 1, 2-67s-29e, SWc 2-67s-29e, is drilling below 9093 feet after running electrical log to 8027 feet.

Collier County: Humble's Gulf Coast Realty Company 8, SW SE 19-48s-30e, in the Sunniland field, is held up by stuck drill collar at 4785 feet. Well is bottomed temporarily at 4815 feet.

Volusia County: Sun Oil Company's Powell Land Company 1, 797 from the south line and 776 from the west line of 11-17s-21e, is a new wildcat. Derrick is being built.

Alabama

Heath & Owens' Nichols 5, NE NE 2-6s-2e, shallow test in Madison County, has been abandoned at a total depth of 408 feet. Oil shows were recorded at 230 feet and shows of gas at 387 feet.

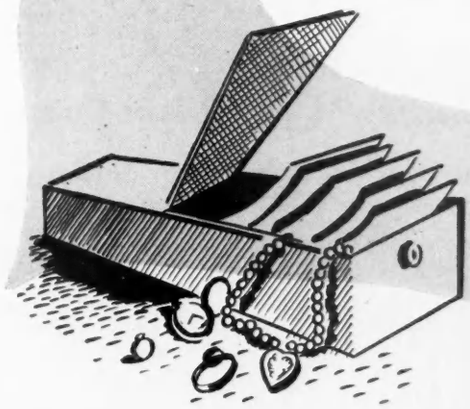
Walker County: Glen D. Rose Oil & Gas Company's First National Bank of Birmingham 2, NW SE 30-12s-7w, is drilling below 2442 feet in lime. Shows of gas were reported at 1788 feet in the Tuscumbia zone.

Winston County: Glen D. Rose Oil & Gas Company's First National Bank of Birmingham 3, SE 7-12s-8w, wildcat which is bottomed temporarily at 1910 feet, is preparing to resume drilling. Shows of gas are reported at 1384-94 feet and slight shows of oil at 1475 feet and 1485-90 feet.

Talladega County: C. L. Collins' B. E. Lamb 1, SE NW 11-19n-3e, wildcat, is reported drilling at approximately 150 feet in lime.

Montgomery County: S. D. Suggs' Suggs 1, SE SE 19-5n-17e, wildcat, is drilling below 513 feet in sandy shale.

BUILT-IN *Safety...*



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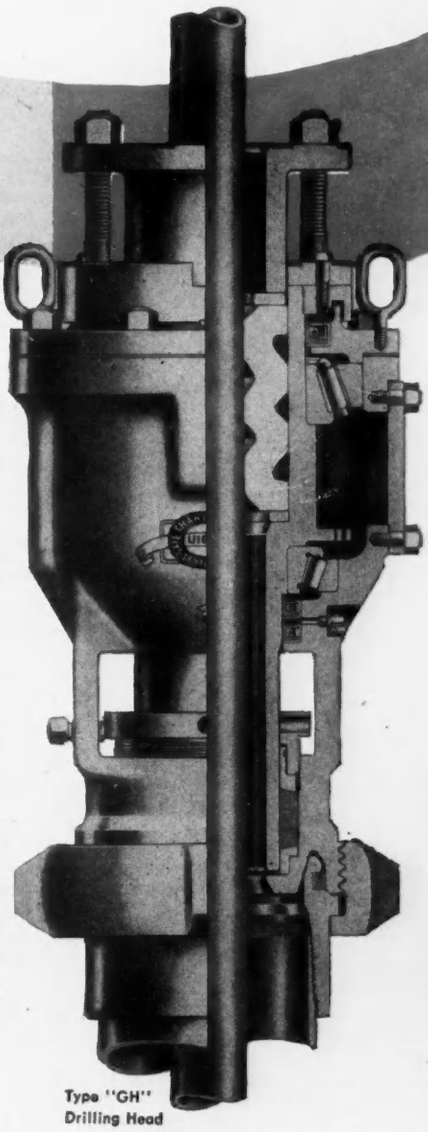

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☆ Arkansas

Smackover-Cotton Valley Dual Completion at Village

Village field has first Smackover-Cotton Valley dual completion; small show in Union County wildcat; Prairie County wildcat abandoned; wildcat projects in Bradley and Drew counties.

Columbia County: McAlester Fuel Oil Company's E. D. Harris A-1, SW SW 10-17-19, Village field, was completed as a Cotton Valley and a Smackover producer, the first such completion in the field. Smackover production came after drilling the plug to 7369 feet, 1 foot above bottom, and is expected to yield the daily allowable of 155 barrels. The Cotton Valley production is from perforations between 5538-50 feet, and is expected to make the allowable of 100 barrels per day. The flow has not yet been gauged.

Union County: H. E. Wasson's Union Saw Mill A-1, C SW SW NE 8-18-12w, a wildcat between Urbana and New London, found a Nacatosh show. It has pumped about 2 barrels of oil daily after being perforated at 2316-18 feet, with 12 shots, and further tests are underway.

Guy Mabee et al's Union Saw Mill 1, wildcat in SW NW 31-18-11, southeast of New London, has been rigged up to drill.

Nevada County: Placid Oil Company's Levi West 1, 19-14-21, which is an edge well in the shallow Irma area, was shut down at 5440 feet after finding salt water in the Smackover lime. Top of the Smackover was reported at 5326 feet. Operators may plug back and test the shallow level in the Nacatosh around 1300 feet, in hope of making this wildcat an oil well in that section.

Prairie County: W. M. Martin and J. H. Coker's Stewart 1, NWc 3-3-5, has been abandoned at 2505 feet as a dry wildcat.

Drew County: C. A. Kinard's McCauley 1, a wildcat project C NE SW 14-12-6, is temporarily abandoned after drill stem test between 1980-85 feet showed salt water. The well may be reworked around 1980 feet. Same operator has a new location, George Reinhart 1, C NE SW 22-13s-6w, in the Desha Basin.

Logan County: Arkansas-Oklahoma Gas Company's wildcat N. C. Biggs 1, S NE NW 7-7n-27w, cemented hole below 3250 and sidetracked. Operators are now drilling below 6110 feet.

☆ South Louisiana

North Oretta Wildcat Testing for Production

North Oretta area wildcat tests for production; Mamou field outpost spuds in; new sand pay at New Iberia given potential; China area wildcat gets salt water on initial test.

Beauregard Parish: Magnolia Petroleum Company's Powell Lumber Co. 1, wildcat 2 miles northwest of the North Oretta discovery, section 17-6s-11w, after drilling and coring to total depth of 8920 feet, is testing in the Cockfield from perforations at 8414-22 feet. The test has 5½-inch casing set to 8510 feet and perforated and squeezed at 8428-30 feet.

Evangeline Parish: Magnolia Petroleum Company's Morein 1, outpost 2 miles east of the discovery well in Mamou field, is spudding in as a 12,000-foot test which will assist in defining production limits in this new field. Magnolia's other operations here include seven other wells drilling, two with derricks up and waiting on machinery, and location staked for five others. The company has completed two wells and expects to have 14 rigs running in the field in a short while.

Iberia Parish: Humble Oil & Refining Company's Germany et al 2, in the New Iberia field, on potential flowed 297 barrels of 33.6-gravity oil from a new sand pay at 9905-16 feet. Flow was through 10/64-inch choke with 1350 pounds tubing pressure and total depth is 10,196 feet with 5½-inch casing set to 10,157 feet. On a prior test casing was perforated at 10,087-101 feet and the well flowed at the rate of 1,600,000 cubic feet of gas daily through ¼-inch choke with 30 barrels of 44-gravity condensate.

Jeff Davis Parish: Sohio Petroleum Company's Trimble 1-A, wildcat test west of production in the China area, SE¼ NW¼ of 2-8s-4w, flowed salt water from perforations at 9180-86 feet after initial perforations at 9174-80 feet were unsuccessful in getting a flow. Both perforations were squeezed and further tests were to be made of showings up the hole.

☆ Upper Texas Coast

Phillips Gets Producer In Chocolate Bayou Area

Second well for Stratton Ridge dome completed; new oil producer for Chocolate Bayou; Humble's initial test in Sugar Valley field good producer; new well for Cold Springs area.

Brazoria County: Second oil well for the Stratton Ridge dome field has been completed by E. Cockrell at the Seaburn Estate 5, located 400 feet northwest of the No. 4 dry hole. The Seaburn 5 flowed a potential of 147.72 barrels of 29.6-gravity oil daily with no water through 10/64-inch choke with tubing pressure of 535 pounds and gas-oil ratio of 520/1. Total depth is 4640 feet with 7-inch pipe set to 4582 feet and perforated for completion at 4576-81 feet. Commercial production on this prospect was established on the northeast flank in October, 1945, by Cockrell's Seaburn 3, producing from a different sand than the Seaburn 5. Cockrell then drilled the No. 4 well which was carried into the salt topped at 4531 feet to total depth of 4537 feet. This well was temporarily abandoned in March of this year when sand kept the well from being successfully completed.

New oil producer for the Chocolate Bayou field in eastern Brazoria County is Phillips Petroleum Company's Benson 1, 164 feet southwest of the Smiley-Benson 1 gasser. The well gauged 250 barrels of 40.1-gravity oil daily through 9/64-inch choke with 2075 pounds tubing pressure and gas-oil ratio of 1360/1. Total depth is 8810 feet with 5½-inch pipe set to 8791 feet and perforated for completion at 8678-88 feet.

Matagorda County: Humble Oil & Refining Company's Grant 1, Burnett & Sojourner Survey, southwest offset to the Superior-Blaffer Thomasson 1, in the Sugar Valley field, has been completed for 360 barrels of 34.5-gravity oil daily through 3/16-inch choke with 1300 pounds tubing pressure and 3150 pounds casing pressure. Production is from perforations at 9066-75 feet with gas-oil ratio of 606/1.

San Jacinto County: Butcher-Arthur's Richards 1, in the Cold Spring field, has been completed for 110 barrels of 42.4-gravity oil daily through 12/64-inch choke with 200 pounds tubing pressure and gas-oil ratio of 486/1. Total depth of the well is 4545 feet with 5½-inch casing set to 4542 feet and perforated for completion at 4510-16 feet in the Cockfield.

☆ Lower Texas Coast

Oil from Wilcox Sand Tested in Oakville Well

Production extended southeast in East Alta Mesa field; sixth wildcat on prospect northeast of Beeville located; West Sinton field production extended half mile to west; outpost in Provident City field sets casing; oil from Wilcox zone tested in Oakville outpost.

Brooks County: Tom Graham's Maura Chavana et al 1 is extending production 4000 feet southeast in the East Alta Mesa field, just east of the shallow Alta Mesa oil field. This well showed for gas-condensate production from perforations at 7303-09 feet on drill stem test, having working pressure of 1650 pounds, bottom-hole pressure flowing of 2750 pounds and shut-in pressure of 5400 pounds. This well, located 4000 feet east-southeast of Standard of Texas' Garcia 4, discovery gas-condensate well for the field, was originally drilled by Union Oil Company of California to 6652 feet, was deepened by Standard Oil Company of Texas to 7361 feet and was temporarily abandoned because of mechanical difficulties. Tom Graham took it over last spring and sidetracked at 6840 feet and re-cored to new total depth of 7340 feet.

Bee County: W. C. McBride, Inc., has made location for the sixth in a series of wildcats on a prospect 4½ miles northeast of Beeville. The sixth test will be McBride's State of Texas 1, a 4000 foot well on the Texas A. & M. College tract of 298.2 acres in Teodoro Molina Survey, Abst. 42, 330 feet from the NE and SE lines. It is located 1300 feet north of McBride's Connally 3, latest dry hole.

San Patricio County: Jones & Morgan's Merrill 1 has extended production in the West Sinton field a half mile west. From perforations at 3385-88 feet the well has been completed for 2,302,560 cubic feet of dry gas per day through ¼-inch choke with shut-in pressure of 1610 pounds and tubing pressure of 1545 pounds. On other tests the well gauged 1,274,340 feet of gas daily through 3/16-inch choke, and 3,717,900 feet daily through 5/16-inch choke. The well topped the pay sand at 3380 feet and was drilled to total depth of 3390 feet.

Lavaca County: Shell Oil Company's F. W. Neuhaus 3, outpost in the Provident City field, 5700 feet east-northeast of No. 1, has casing set and will perforate for completion in the 8700 foot

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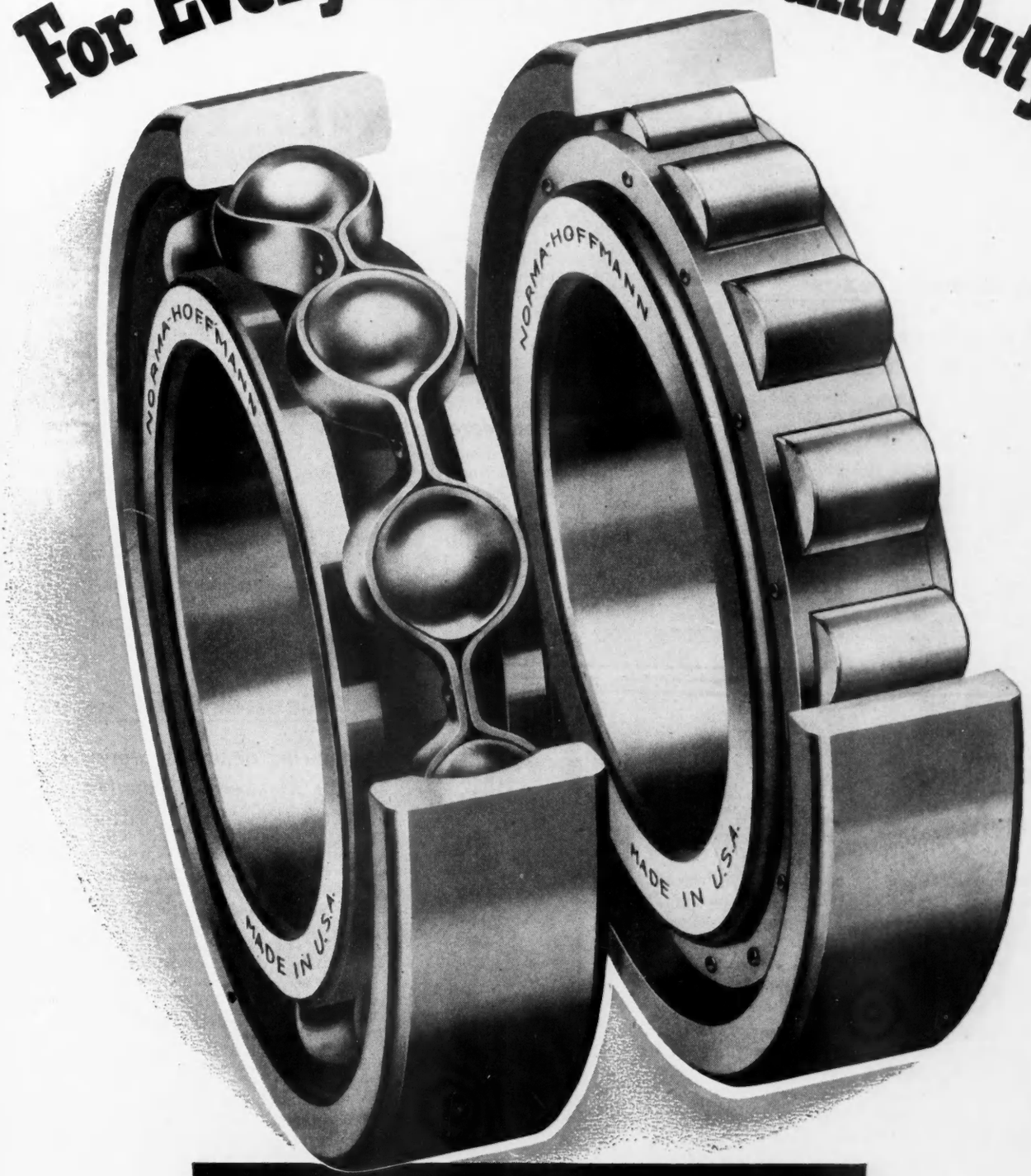

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Live Oak County: Stanolind Oil & Gas Company's Reagan 1, outpost in the Oakville field, has tested oil in the Wilcox zone and may become the first oil producer from the Wilcox in the field. On drill-stem test at 6733-36 feet in the Slick sand, 1430 feet of 36-gravity oil was recovered in 40 minutes through 3/8-inch top choke. Seven-inch casing has been set to total depth of 6738 feet and the sand zone will be tested. Coquat's Reagan 3, discovery well for Wilcox production in the field, and northeast of the Reagan 1, tested oil and salt water in the Slick sand and then completed as a gas well in the Luling sand.

☆ Southwest Texas

Small Gas Discovery in Webb County Is Reported

Weil field northeast outpost abandoned; Starr County wildcat cores dry gas sand; production pipe set in Roos-Bennett 2, Cortez field; small gas discovery well completed in Webb County.

Jim Hogg County: Humble Oil & Refining Company has abandoned the Mestena Oil & Gas Company 1, northeast outpost at Weil field, at total depth of 5175 feet. An electrical log was run to total depth and a drill-stem test at 5132-75 feet recovered 210 feet gas cut mud.

Starr County: Henshaw Brothers & Coastal Refineries' Sanchez 2, wildcat in the J. Poitevent survey 3 miles northeast of Margofield, cored a dry sand with slight dry gas odor, logging it below 4700 feet. The well is being drilled to total depth of 5000 feet and after operations are completed the rig will be moved 50 feet southeast of the old Sunray Sanchez 1 test, Section 344, for a new wildcat.

In the Cortez field of Starr County, W. H. Holland's Roos-Bennett 2, 933 feet southwest of the Roos-Bennett 1 discovery oil well, set 5½-inch casing to total depth of 3005 feet, and was to perforate opposite a sand at 2966-80 feet for production test. On drill-stem test of this sand 125 feet of mud, salt water and oil was recovered.

Webb County: Dulaney Oil Company's State of Texas 3, gas discovery well one mile southwest of the Aviators field, has been completed for an estimated 250,000 cubic feet of dry gas per day on open flow with shut in pressure of 50 pounds. Production string of 5½-inch casing was set to 1501 feet and production is from open hole at 1501-60 feet, total depth.

Rules Changes Considered

The Oklahoma Corporation Commission has taken under advisement testimony seeking to revise and amend the general rules and regulations covering oil and gas conservation. Hearing was ended June 24, after most of the meeting was spent in discussing the provisions covering filing of confidential well logs. Major companies generally opposed the filing of electric logs and other geological information.

☆ South Central Texas

Bastrop County Wildcat Is Abandoned at 3579 Feet

Wildcat southwest of Bastrop abandoned; Medina County test plugged; Catarina Farms wildcat coring.

Bastrop County: C. W. Voyles has abandoned the Moncure Est. 1, wildcat 4 miles southwest of Bastrop, after drilling to total depth of 3579 feet. The well failed on production test in the Edwards lime at 3479-86 feet and was deepened 100 feet with no further shows of oil or gas. After drill-stem test at 3479-83 feet had recovered oil and gas cut mud, 5½-inch casing was set to 3479 feet, top of the Edwards lime. On production test at this interval the well tested dry and was then acidized after deepening to 3486 feet, but swabbed mud and acid water on test with no shows. A light show of oil and gas cut mud in the top of the Georgetown lime at 3375-90 feet and a gas show in the top of the Midway at 980 feet were not tested.

Medina County: Woodrow Glasscock's Carle Mercantile Co. 1, wildcat in John Twchig survey 8 miles west of Yancey, has been abandoned at total depth of 2412 feet. A drill-stem test at 2395-2412 feet in the Edwards lime recovered fresh water with 4 pounds working pressure. An electrical log was run to total depth.

Dimmitt County: The Texas Company's Catarina Farms Co. 1, wildcat in the Ellen Hart survey 3½ miles northwest of Catarina, started coring at 3030 feet and at 3360 feet in shale was still coring. This is a 6000-foot test.

☆ Central West Texas

Flowing Bend Discovery For Shackelford County

Shackelford County has flowing discovery from the Bend; third oil producer and a failure recorded by Sanders pool; Coleman County wildcat has shallow oil sand.

Shackelford County: Roeser and Pendleton Inc.'s Lee-Shell 1-B, C NE NW T&P Ry. 27, Block 11, 3 miles southwest of Albany, opened a Bend producing area in flowing 66 barrels of oil on 14-hour test through ¾-inch choke after using 3000 gallons of acid in open hole at 4458-78 feet. This wildcat was plugged back from water in Ellenburger at 4824-74 feet. It correlates low on all markers to a 4643-foot failure a mile southeast. Allied Oil Company and Fox's Moberly 1, northeast offset to the Sanders field discovery will retest Mississippi and Bend shows after testing water at 4817 feet in Ellenburger, topped at 4568 feet, or 46 feet low. R. H. Roark et al's Sanders 2, third producer and highest on the Ellenburger, topped at 4509 feet, flowed 140 barrels of oil and an undetermined volume of water after acidizing open hole at 4548-61 feet. The projected development program for this area has been curtailed due to the erratic performance of the Ellenburger.

Coleman County: C. O. Glenn et al's Fox Johnson 1, Buenita Alderate Survey No. 275, logged oil-saturated sand at 1346-60 feet, and pipe has been set to try for completion.

Muzzling And Meddling

The June 22nd SEP has three editorials that should be "must" reading for every literate person in America. "The United States Department of Labor," says The Post, "has kindly sent us a copy of a propaganda leaflet called Women's Stake in Unions." Comments The Post, "Now that the Labor Department is openly in the argument on the side of unions, it seems only fair to us to take the muzzle off the boss." Editor Hibbs thinks, if it were not for the Wagner Act, the boss "might have something to say as wise as the kind of advice the customers have been getting from Lewis, Murray, Reuther, Petrillo and Green."

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☆ East Texas

Cherokee County Wildcat Reported in James Zone

Shallow oil production encountered on northeast edge of the Manziel field; Cherokee County wildcat reaches the James zone.

Wood County: Rogers Lacy and R. J. Caraway's Shamburger 1-A, James More Survey and east offset to the most northeasterly Paluxy producer in the Manziel field, recovered 2250 feet of oil, including 2 to 5 percent rotary mud, and 90 feet of 15.7-gravity oil when drill-stem test was made of sub-Clarksville sand at 4144-62 feet. This showing confirms commercial production for the upper pay. The test will continue to Paluxy before setting pipe.

Cherokee County: Hunt Oil Company's Andrews-Pure 1, 2 miles west by north of Jacksonville and a Travis Peak prospect, entered dry James lime at 9205 feet, and was drilling at 9290 feet. Tom Shaw et al's Tilley-Pure 1, Chas. Widgeon Survey and near a small Woodbine discovery pumper, was abandoned at 4478 feet in Woodbine.

Anderson County: Tex Harvey Oil Company's Hall 1, S. Rocha Survey and 6 miles south of Palestine, was drilling shale at 4740 feet, having logged Pecan chalk at 3955-4100 feet with elevation of 337 feet.

Rusk County: Mid-Continent Petroleum Corporation's Alford 1, John Sory Survey, expanded the Henderson field 2008 feet southwest in flowing 75 barrels of 44-gravity oil, with gas-oil ratio of 9000/1 on natural test through ⅛-inch choke from Pettit perforations at 7322-30 feet. This outpost also showed gas and distillate from Travis Peak perforations at 7510-28 feet.

Cass County: W. B. Hinton's Betts 1, Beard Survey, 4 miles southeast of Marietta, was reported down 7800 feet, without much promise. Electric log was run to 7727 feet, in the Pettit section, and operator is checking results.

☆ North Texas

Southwestern Extension For Haskell County Field

Haskell County field extended half-mile southwest; second producer given Bend Lime pool in Young County; Jack County wildcat tests small volume of gas.

Haskell County: Thos D. Humphrey's Smith 1, southeast corner of 100-acre lease and half-mile southwest outpost for the Lawson field, flowed 125 barrels of 42-gravity oil while running tubing to complete from open hole at 2752-70 feet in Adams Branch, topped at 2751 feet. Humphrey's Smith 2, west offset, flowed oil when plugs were drilled from 7-inch at 2827 feet with the hole bottomed at 2837 feet, while Arnold 1 cemented pipe after drilling to the top of the pay at 2794 feet.

Young County: Hanlon and Buchanan (Warren's) Millis 1-B, east offset to the firm's recent Bend discovery on the Kendall tract, J. Crosby Survey, flowed 5 barrels of oil hourly, with gas-oil ratio of 1500/1, natural through choke from open hole at 3439-64 feet in Bend topped at 3435 feet.

Jack County: Continental Oil Company's Heath 1, C. A. Beaty Survey and 7/16 mile southwest of the Webb one-well Strawn pool tested above one million feet of gas daily from open hole at 4432-60 feet in Bend, topped at 4432 feet. This strike was plugged back from 6214 feet.

Clay County: Continental Oil Company's Heard 2-C, northeast offset to its Ellenburger discovery for the Heard field, failed to make a pumper from multi-acid treatments of perforations at 6533-39 feet in Ellenburger, topped at 6505 feet, or 49 feet low. An attempt will be made to complete from 5800-foot Bend.

☆ West Texas

Five Operations Slated For Clear Fork Discovery

Ellenburger wildcat in Andrews County will try for completion; Clear Fork production extended in South Fullerton-Devonian field. Five operations now slated for indicated Clear Fork discovery for Block 12 area, Andrews County.

Andrews County: Placid Oil Company and Gulf Oil Corporation's Thornberry 1, C SW SW PSL 5, Block A-42, and 4⅓ miles northeast of the Martin field, nearest Ellenburger area, was awaiting delivery of pipe to try for completion after showing oil and water in Ellenburger, topped at 11,935 feet with elevation of 3255 feet. Drill-stem test at 11,934-953 feet yielded 2700 feet of

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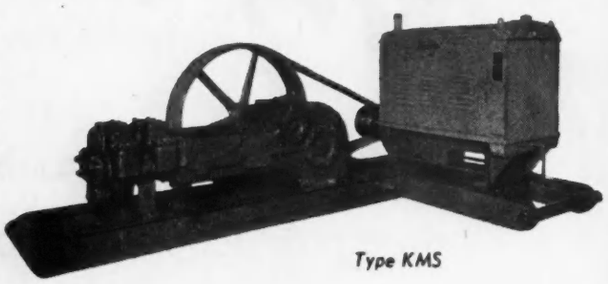

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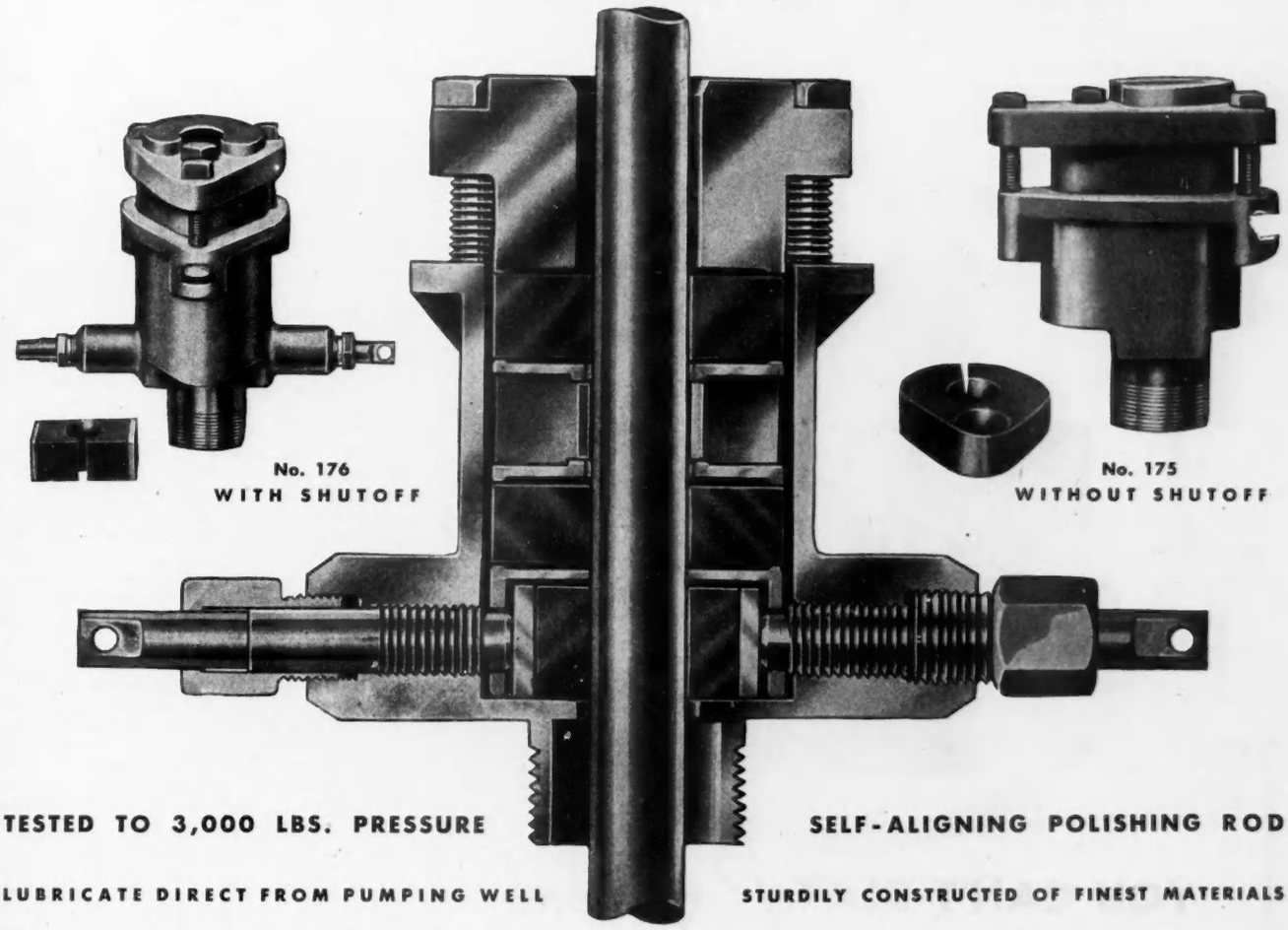

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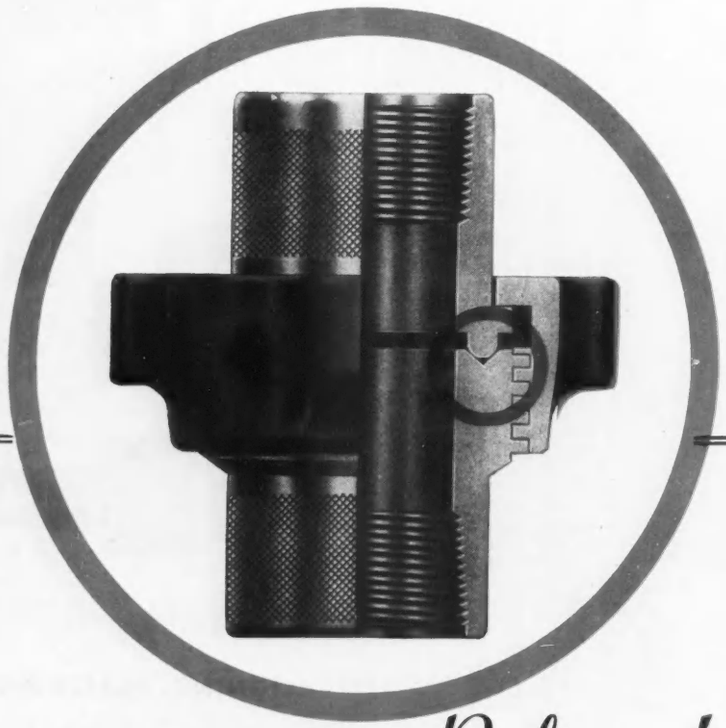
The Texas Company's University 1-P, indicated Clear Fork discovery for the Block 12 expansive structure, was drilling 7980 feet to explore the Devonian before running pipe. This wildcat headed oil when tester was used at 7127-7269 feet.

Stanolind Oil & Gas Company's University 1-P, C NE NE Section 44, Block 13, completed March, 1945, as the discovery for the South Fullerton-Devonian field, and structurally low in the Devonian, is making a flowing producer from Clear Fork (Fullerton) perforations at 6930-7025 feet. Following treatment with 2000 gallons of acid the well flowed 104 barrels of sweet oil daily through 12/64-inch. Second treatment boosted the flow to 182 barrels daily.

Stanolind's Lotus 1-A, C SE NE PSL 16, Block A-48, 15/16 mile southwest of the Fullerton-Devonian field and a failure in the Devonian at 8560-95 feet, flowed 92 barrels of oil on 23-hour test through 13/64-inch when plugged back to 7106 feet to complete in the Clear Fork, topped at 6740 feet.

Winkler County: Sun Oil Company's Wheeler 1-A, northwest outpost for the Wheeler field, entered the Devonian at 8356 feet, or 10 feet high to an Ellenburger producer ½ mile south and 136 feet high to a plugged back Silurian pumper ½ mile west. Drill-stem test at 8370-8570 feet yielded flow of oil, and was drilling at 8740 feet to explore the Ellenburger. Phillips Petroleum Company's T. P. Land Trust 1-G, ½ mile east of production and in Ector County, scored the highest Devonian top in entering this zone at 8220 feet, with elevation of 3148 feet. This high structural position was reflected when drill-stem test at 8290-8390 feet yielded gas at rate of 5,310,000 feet daily and distillate at rate of 4 barrels hourly. The Texas Company's T. P. Land Trust 1-G, ¾ mile north by east outpost, was drilling at 5910 feet, while Cities Service Oil Company's Wheeler 1, an intermediate test with production confirmed in the Devonian, was drilling at 8655 feet. It is now evident that the Wheeler area will be expanded into an important field.

Ector County: Phillips Petroleum Company's T. P. Land Trust 1-E-a, near C NW NW T&P Ry. 39 and a mile east of the most southerly Devonian producer in the TXL field, flowed 7 barrels of oil and acid residue hourly after treating perforations at 5615-30 feet in Clear Fork (Tubb), topped at 5610 feet. It will qualify as a new field.



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HOUSTON, TEXAS

☆ New Mexico

Yeso Production Extended Across Eunice Townsite

Production from the Yeso extended across Eunice townsite; flowing producer given southwest edge of Paddock field, and northeast outpost will explore the Yeso after failure in Glorietta.

Lea County: Magnolia Petroleum Company's Marshall Unit 2, C SE NW 34-21s-37e, ½ mile west of Yeso production in the north portion of the Penrose-Skelly field, flowed at rate of 40 barrels of 33.1-gravity oil hourly on drill-stem test of Yeso at 6455-6525 feet. This deepened regular Permian producer was bottomed at 6619 feet, where 5-inch will be landed to complete through perforations. Hare 2 tested gas at rate of 5,000,000 feet daily when tester was used at 6339-6425 feet. Second drill-stem test at 6374-6443 feet returned gas to the surface within 4 minutes, and the recovery consisted of 120 feet of gas- and distillate-cut mud.

Paddock Field: Neville Penrose et al's Hinton 7, NW NW SW 12-22s-37e, southwest edge of the Paddock field, flowed 191 barrels of oil on 19-hour test through choke after using 2000 gallons of acid at 5140-70 feet in Glorietta, topped at 5055 feet. Repollo Oil Company's State 1-367, north edge of the field, recovered 220 feet of slightly oil- and gas-cut mud when tester was used at 5159-5212 feet. Second test at 5220-50 feet yielded 110 feet of oil- and gas-cut mud and 98 feet of salt water. It will deepen to the Yeso. The company's Simmons 1, 1⅓ miles northeast of the Paddock field and a failure in the Glorietta, was drilling at 5740 feet, and will explore the Yeso.

Wildcats: Magnolia's Black Hills Unit 1, C NW NE 31-17s-20e, Chaves County, and supported by a unitized block of 17,627 acres, is moving in rig to explore the Ellenburger, or 8000 feet. In De-Baca County, Pure Oil Company's Federal 1, a projected 7000-foot Pennsylvanian test, resumed drilling after landing surface pipe.

ALABAMA WILDCAT

Madison County—Failure: Heath & Owens' Nichols 5, ne ne 2-6s-2e, abnd 408.

ARKANSAS WILDCATS

Drew County—Failure: C. A. Kinard's McCauley 1, c ne sw 14-12s-6w, Wilcox 1978, temp abnd 5056.

Ouachita County—Failure: Joe Mucher's Berg Est. 1, c nw se ne 12-14s-18w, abnd 2600.

Union County—Failure: H. E. Wasson's Union Saw Mill A-1 (OWDD), sw sw ne 8-18s-12w, otd 2412, perf 12 shots 2316-18, pump 15 bbls and pumped off, abnd 2564.

CALIFORNIA WILDCATS

Orange County—Failure: Mid Cal Pet. Co's K-1, 24-3s-9w, Kraemer area, abnd 3898.

Kern County—Failure: Rotschild-Bender Oil Operations' Sheep Springs 1, 17-29s-21e, Sheep Springs area, 1st Phacoides 3880, main Phacoides 3930, Kreyenhagen 4237, Salt Creek Shale 4088, abnd 4260.

Tulare County—Failure: Shell's Sunnyvale Comm. 14-1, 29-23s-26e, Sunnyvale area, abnd 4825.

Solano County—Failure: Standard's Scally Est. 1, 10-4n-1w, Potrero Hills area, abnd 2500.

COLORADO NEW PAY TEST

Rio Blanco County—Failure: Cobb-Newton Oil's Gov't 1-10, c se se 4-n-102w, Rangely field, defining south limits, Dakota 3795, Curtis 4595, Weber 6404, abnd 6859 in Pennsylvanian.

ILLINOIS WILDCATS

Clay County—Oil Discovery: T. Blake Dirickson's Howell 1, se sw sw 9-2n-7e, pump 175 bbls. fr Av., 2959-70, td 3205.

Clay County—Failure: J. L. Black's Stanley 1, n½ se nw 8-4n-8e, abnd 3018.

Clinton County—Failure: R. J. McFarland's Koch 1, nw sw sw 7-2n-3w, abnd 2444.

Coles County—Oil Discovery: Vincent J. Nolan's Coombs Est. 1, ne ne sw 23-14n-7e, pump 12 bbls fr Rosi. 1771-94, td 1795.

Fayette County — Failure: Claude Neon Light's Poland 1, 31-6n-2e, abnd 2141.

Franklin County—Failure: Phillips' Throw 1, nw sw ne 36-6s-3e, abnd 3219.

Hamilton County—Oil Discovery: Magnolia's Rohrer 1, nw ne sw 23-4s-7e, pump 27 bbls fr Av 3273-78 and 3280-82, td 3290.

Washington County—Failure: Wiser Oil's Kasban 1, nw sw ne 34-2s-1w, abnd 1797.

White County—Oil Discovery: W. O. Allen's Hanna Brothers 1, nw ne se 28-5s-10e, pump 50 bbls fr Cyp. sd 2729-43, td 2743.

KANSAS WILDCATS

Barton County—Oil Discovery: Black-Marshall's Klug 1, se se se 28-17s-13w, 52 bbls oil, 16% wtr fr Arb. 3414-17, td 3417.

Barton County—Failure: Republic Natural et al's Logan 1, se se sw 26-17s-14w, abnd 3388.

Butler County—Failure: O. J. Connell et al's Covert 1, sw nw sw 3-27s-5e, abnd 2777.

Ellis County—Failure: Mouser Drlg. et al's Moore 1, sw sw nw 19-14s-19w, abnd 3874.

Ellsworth County—Failure: Gough Davis' Tomsu 1, se ne se 19-15s-10w, abnd 3372.

Sedgwick County — Failure: Helmerich & Payne et al's Williams 1, sw sw sw 28-25s-2w, abnd 4100.

NORTH LOUISIANA WILDCATS

Caddo Parish—Failure: Hugh M. Sneed & Simmons 1, 660 fr sl 1995 fr wl 15-6n-14w, abnd 1200.

De Soto Parish—Failure: Delta Drlg. Co.-G. C. Schoonmaker's G. W. Sample 1, (OWDD) 990 fr nl 1650 fr wl 12-13n-14w, otd 3129, base massive anhy 5150, Travis Peak 6540, abnd 6800.

Franklin Parish—Failure: Sohio's Leo Rogers 1, c sw ne 15-16n-9e, chalk 3617, gas rock 3626, Tuscaloosa 3716, Paluxy 4510, showed some oil and gas, abnd 4688.

Sabine Parish—Failures: B. L. Jones & W. F. Newton's J. K. Phares 1, 860 fr nl 330 fr wl 9-5n-12w, abnd 2425.

McDaniel Bros' La. Long Leaf Lbr. Co. 1, ne 33-6n-12w, showed some oil, abnd 2517.

SOUTH LOUISIANA WILDCATS

Jeff Davis Parish — Failure: Barnsdall's Powell Lbr. Co. 1, start sec sect go n 00° 21 mins e th 3063 th n 89° 28 mins w 1049 to lcn in 31-7s-4w, 4 mi w of n end China fld, abnd 8745.

Washington Parish—Failure: Humble's Gaylord Container Corp. 1-B, fr sec sect 42 go w alg sl 1992.5 th nyl parallel to el 1987.1 to lcn in 42-1s-14e, Angle area, abnd 9306.

SOUTH LOUISIANA NEW PAY TESTS

Acadia Parish—Egan Oil Discovery: Sun-Sohio's Regan 3, (OWWO) 500 w 1525 n se 31-9s-1w, pay 11,874, perf 24 shots 11,874-80, flow 188 bbls 45-gr oil, ⅛-in, 5% wtr, tp 5150 lbs, td 13,500.

Iberia Parish—New Iberia Oil Discovery: Humble's Mrs. Cecile W. Germany et al 2, fr m/wly/s cor sect 2 go nwly alg swl 1395.8 th ne at ra 684.3 to lcn in 2-12s-7e, pay 9905, perf 16 shots 9905-16, flow 297 bbls 33.6-gr, 10/64-in, tp 1350 lbs, gor 610/1, td 10,196.

MICHIGAN WILDCATS

Clare County — Failure: Gordon Oil Co.'s Case 1, nw nw sw 5-19n-4w, abnd 1965.

Isabella County—Failure: M. Bliss Keeler's Anderson 1, sw nw nw 2-13n-4w, Dundee lime 3718, abnd 3738.

Saginaw County—Failure: Bridgeport Oil Co.'s Van Sickle 1, se se sw 33-10n-3e, abnd 2932.

MISSISSIPPI WILDCAT

Yalobusha County—Failure: J. S. Henderson's Stone 1, ne sw 21-24n-6e, abnd 3312.

MISSISSIPPI NEW PAY TEST

Marion County—Hub Field Discovery: Humble's E. A. Ball 3, nwc 20-2n-4e, flow 43 bbls cond, 1,490,000 gas fr Comananchean 10,098-106.

MONTANA WILDCAT

Toole County—Failure: Union Oil Danielson No. 1, ne ne nw 8-35n-2e, Grandview area, Sunburst 1675-1700, Madison 1950, td 1954, abnd.

CAPACITY OF REEL

Line Size	Approximate Capacity
.066	29,000 Ft.
.072	24,000 Ft.
.082	18,500 Ft.
.092	15,000 Ft.

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MAGNETOMETER MAP
OF
SOUTH ALABAMA & N. W. FLORIDA

This map shows a number of both local and regional magnetic anomalies, magnetometer prospects, known Geological features, (anitcline & faults) and, as interpretated from magnetic data, a large pre-Comanchean embayment, (potential salt dome area). Covering approximately 19 counties of south Alabama and 9 counties of Florida, this map can be used to advantage by Geologists, Oil Operators and Lease & Royalty buyers. Price $15.00.

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HELP WANTED

■ HELP WANTED—Experienced Party Chiefs, Computers, Observers and Shooters needed by newly organized seismograph company. All replies will be treated confidentially. Give full details of experience in first letter and state salary expected. Box 44, c/o The Oil Weekly, Houston, Texas.

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NOTICES

GEOLOGICAL MAPS

Covering the Gulf Coast of Texas and Louisiana, showing all new discoveries and all dry holes drilled to April 15, 1946. Dry holes show well-elevations, total depths, and paleontological data. Oil fields colored green, gas fields red, sulphur purple, geophysical prospects yellow, depleted fields brown. Gulf Coast of Texas in one section size 4½ ft. by 10½ ft. Scale one inch to two miles. Price on paper $50.00, on linen $75.00. Louisiana Gulf Coast covers from T3N to the Gulf drafted in two sections, scale one inch to two miles. Hand colored the same as the Texas Gulf Coast. Size of each section 3½ ft. by 10 ft. Price of each section $25.00 on paper and $37.50 on linen.

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Trading Post Section, The Oil Weekly
P. O. Box 2608 Houston 1, Texas

NEW MEXICO WILDCAT

Eddy County—Failure: D. C. Devito et al's State 1, c ne ne 19-23s-26e, elev 3408, anhydrite 221, lime 1395, Delaware sand 1680, abnd 2757.

WEST TEXAS WILDCAT

Andrews County—Failure: Humble's Gaines 1, c ne ne PSL 14 blk A-39, elev 3460, salt 1740-2825, Yates 2980, Devonian 8498, abnd 8555.

WEST TEXAS NEW PAY TEST

Ector County—TXL Field Oil Discovery: Shell and Arkansas Fuel Oil Co.'s Thomas 1-E, 660 snl 2004 ewl T&P Ry. 32, blk 45, T-1-S, offset Devonian wells, elev 3228, Mississippi 7850, Devonian 7932, pump 16 bbls 34.5-gr oil, 65 bbls wtr, 4000 gals acid Wolfcamp perf 7545-7695, td 8028, pb 7850.

WEST CENTRAL TEXAS WILDCATS

Runnels County—Failure: S. H. Davis et al's Harris 1-B, 695 snl 3500 wel sbdn 2, J. V. Cabrera sur 514, elev 1913, Morris sand 3558-71, Gardner 3942, Gray 4036, abnd 4092.

Taylor County—Failures: Great Lakes Carbon Corp.'s Hopkins 1, 1650 snl 990 wel S.P. Ry. 21, blk 2, elev 1791, Dothan 1720, Saddle Creek 2070-90, Flippen 2110, Upper Hope 2245, Gunsight 2450, Swastika 2325, Bunger 2644, abnd 2760.

Hungerford-Gaston & Ferguson's Webb 1, 1550 snl 1850 ewl sbdn 12, Wm. Bell sur 425, elev 1901, abnd 1550.

M. S. Ingleright and West Central Dr. Co.'s Harp 1, 4575 wel 5100 nsl John McSherry sur 129, elev 1824, Saddle Creek 2293, Flippen 2332, U. Hope 2477, abnd 3105.

NORTH TEXAS WILDCATS

Archer County—Oil Discovery: Cochran & Cain's Virgil Seay 2, 150 out nwc bl 69, J. W. Harris sbdn, elev 1018, pump 9.8 bbls 38-gr fr Cisco sd 1148-56, td 1159 in shale.

Archer County—Failures: L. M. Price et al's Pechacek 1, 3350 snl 1500 wel M. Fanning sur, abnd 470.

F. P. Timberlake-H. M. Kelleher's Wilson 1, lot 766, 750 nsl 1200 ewl sect 32, ATNCL, abnd 1617.

Cooke County—Failures: H. D. Egger et al's Wade 1-A, 1950 wel 950 nsl E. T. Ry., abnd 2000.

Frederick Electric Co.'s Streng 1, 700 snl 500 ewl of 96-ac tr, S.P. Ry. 5, abnd 1202.

EAST TEXAS WILDCATS

Anderson County—Failure: Humble's Freeman 1, 400 out sec 99.76-ac tr, or 2050 snl 2000 wel of John Little sur, elev 562, Nacatoch 2823, Pecan chalk 3492, Austin 4517-4757, Woodbine 5005, Kiamichi 7064, Goodland 7126, Paluxy 7469, Glen Rose 7625, massive anhy 10,188, James 10,660, Pettit 12,380, Transitional zone 12,520, jkd and abnd 12,686.

Robertson County—Failure: O. B. Perot et al's Briggs 1, 16,500 fr nel 3700 fr sel T. J. Chambers sur, elev 356, abnd 2180.

EAST TEXAS BORDER COUNTIES WILDCAT

Cass County—Failure: W. B. Hinton's J. O. Betts 1, 660 fr sl A. S. Beard sur, 660 fr el lse, Pecan 2918, Blossom 3101, Eagleford 3758, Woodbine 3962, Comanche 4132, Ft. Worth 4435, Goodland 5006, Paluxy 5053, Glenrose 5452, Anhy 6491, Massive Anhy 6714-6919, Pettit 7655, Travis Peak 7750, abnd 7810.

SOUTH CENTRAL TEXAS WILDCATS

Bastrop County—Failure: Dunnam & Gratehouse's McNeil Chapman 1, 810 fr n&sl 1000 fr wl 93-ac lse, 9200 fr el 4300 fr sl Ignatio Sartuche sur, abnd in Wilcox 3048.

Dimmett County—Oil Discovery: Humble's Mrs. Kate Bradshaw 1, 518 fr nwl 1715 fr swl lot 7, T&NO sur 15, 149-ac lse, pay 2795, perf 72 shots 2795-2807, pump 30.25 bbls 37.7-gr, 3% wtr, td 2965.

Rio County—Failure: Geo. W. Strake-Warren Pet. Co.'s Grace C. Henry 1, 467 w of el 3700 s se due n cor 3547-9-ac tr, A. Petra de la Pena sur 153, hard Taylor 2540, Austin ch 2902, Eagleford 3245, Buda lt 3330, Del Rio 3420, Georgetown 3507, Edwards lt 3590, abnd 3669.

SOUTHWEST TEXAS WILDCATS

Jim Hogg County—Failure: Buffalo Oil Co.'s Ysidro Vela 1, 330 fr sl 330½ fr nl blk 141, W. A. Dannelly sbdn Ysidro Vela ld of 1855.5-ac lse, 1400 fr n&el sur 575, El Peyote Gr, on 931.8-ac lse, abnd 1915.

Webb County—Failure: Slick Oil Co.-Houser & Campbell's L. Moglia 1, 330 fr el 3980 fr sl 2280 fr nl sur 722 on 320-ac lse, 4 mi w of Kohler fld, 3 mi n Volpe fld, abnd 2711.

LOWER TEXAS COAST WILDCATS

Caldwell County — Failure: Ellmag Oil Corp.'s T. C. Watts 1, 1658 fr nel 91-ac lse, E. Curtis sur, 1000 fr swl 2000 fr sel sur, Austin chalk 2140, Buda lt 2404, abnd 2428.

Jackson County—Failure: H. H. McFarland's W. F. Paul et al 1, 541 fr nwl 2450 fr sel 4370 ne of w cor 320-ac lse, H. Hunt sur, abnd 3528.

San Patricio County — Failure: Herbert J. Schmitz-Skinner & Eddy's Dr. L. Cockerham 1, 467 fr wl 2967 fr nl sect 18, Geo. H. Paul sbdn Welder Rch, abnd 6303.

LOWER TEXAS COAST NEW PAY TEST

Bee County — Sliva Distillate Discovery: Bridewell Oil Co.'s Jake Huble Est. 1, 330 fr sel&swl 200-ac lse, 330 fr sel 2350 fr swl Brooks & Burleson sur, 3850 w sw Sliva 1, disc well, Frio pay 3422-42, perf 24 shots 3422-28, flow 400,000 gas, 8 bbls cond, 5/32-in, tp 1250, cp 1350, td 4500.

UPPER TEXAS COAST WILDCATS

Ft. Bend County—Failures: W. L. Goldston's C. G. Roesler 1, 1500 fr sel 500 fr nel 80-ac lse, F. Forster sur sect 40, abnd 7100.

Jack W. Frazier's Selma Jaeggli 1, 330 fr nw&nel 20-ac lse out of 100-ac tr, Barnabus Wickson sur sect 19, off sw flk Big Crk Dome, abnd 7247.

UPPER TEXAS COAST NEW PAY TEST

Matagorda County—Sugar Valley Oil Discovery: Skelly's C. C. Talcott 1, 330 fr nw&nel 38.5-ac tr, P. Burnett & A. S. Sojourner sur, pay 8853, perf 23 shots 8855-63, flow 128 bbls 32.9-gr 5/32-in. gor 847/1, tp 410 lbs, td 9508.

WESTERN CANADA WILDCATS

Central Alberta Plains—Duvernay Failure: Imperial Oil's Duvernay 1, lsd 6 30-55-11w4th, abnd 2798 in Devonian limestone.

Kinsella Failure: Imperial Oil's Kinsella 14, lsd 7 28-45-9w4th, abnd 2048 in Viking sand.

Provost Oil Discovery: Imperial Oil's Provost 1, lsd 3 27-37-3w4th, flow 60 bbls by heads, 20-22 degree oil, 165,000 gas fr L. Cretaceous Contact sand; 1,500,000 gas fr Viking sand, top 2373 ft, td 2549.

South Alberta Plains—Princess Failure: California-Standard Co.'s Princess-CPR 12-22A, lsd 1 22-20-12w4th, abnd 4140 in Devonian Dolomite.

WILDCAT STARTS

ALABAMA

Clarke County: California's White City Plantation 2, ne se 12-7n-1w, rds.

Pickens County: C. H. Murphy, Jr.'s R. E. Eaton 1, ne se 34-19s-16w, dk.

ARKANSAS

Bradley County: American Liberty Oil Co.'s Bradley Lbr. Co. 1, c ne ne sw 15-13s-19w, 4000-ft test.

Chicot County: W. O. White et al's Geo. Hudson 1, c ne nw 8-16s-1w, 6000-ft test.

Drew County: Curtis Kinard's Geo. Reinhart 1, c ne sw 22-13s-6w, mim.

CALIFORNIA

Los Angeles County: Basin Oil Co.'s Standard Brick 1, 28-2s-14w, Inglewood area, lcn.

Shell's Braille Institute 1, 2-3n-16w, Newhall area, lcn.

Solano County: Amerada's H. D. Winship A-1, 15-6n-2e, Dixon area, ru.

Kern County: Bender Oil Operations' Cliare 2, 22-28s-28e, Kern Front area, grade.

Independent Exploration Co.'s Cymric 44, 21-29s-21e, Cymric area, ru.

Santa Barbara County: Ohio Oil Co.'s Prevedello 1, 1-4n-28w, Goleta area, laying lines.

COLORADO

Rio Blanco County: Phillips' Yellowjacket 1, nw se sw 1-1n-92w, Yellowjacket area, 6000,-ft test, drlg 1060.

Phillips' Unit 1, (OWDD) csl, nw se 10-2n-88w, Poose Creek, otd 2403, drlg 2850.

ILLINOIS

Coles County: Nation Oil's Wilson 1, se ne sw 4-13n-14w, drlg.

Effingham County: A. S. Hammer's Smith 1, ne se ne 18-9n-4e, lcn.

Jefferson County: Ashland Oil's Barnett 1, se se nw 17-1s-4e, lcn.

Ashland's Brookman Heirs 1, se ne nw 17-1s-4e, lcn.

Jersey County: Nat. Assoc. Pet.'s Stifle 1, nw se ne 6-6n-11w, drlg.

Madison County: Joe Kesl, Jr.'s Messerli 1, sw ne nw 35-5n-6w, lcn.

E. P. Jarvis' Hitz 1, nw ne se 8-5n-5w, lcn.

Washington County: Ben Taylor et al's Bauza 1, sw se sw 6-3s-1w, lcn.

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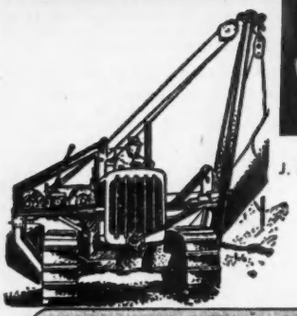
J. H. (Herb) Smith
Partner



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An A.A.P.G. Publication!

TECTONIC MAP
of the
UNITED STATES
1944

Prepared under the Direction of the Committee on Tectonics, Division of Geology and Geography, National Research Council.

Chester R. Longwell, Chairman, Philip B. King, Vice-Chairman.

Charles H. Behre, Walter H. Bucher, Eugene Callaghan, D. F. Hewett, G. Marshall Kay, Eleanora B. Knopf, A. I. Levorsen, T. S. Lovering, George R. Mansfield, Watson H. Monroe, J. T. Pardee, Ralph D. Reed, George W. Stose, W. T. Thom, Jr., A. C. Waters, Eldred D. Wilson, A. O. Woodford.

A NEW GEOLOGIC MAP OF THE UNITED STATES AND ADJACENT PARTS OF CANADA AND MEXICO

Geologic structure, as evidenced and interpreted by a combination of outcropping areas, bedrock, surface disturbance, and subsurface deformation, is indicated by colors, symbols, contours, and descriptive explanation. Igneous, metamorphic, and selected areas of sedimentary rock are mapped. Salt domes, crypto - Volcanic disturbances, and submarine contours are shown. The base map shows state boundaries, rivers, a pattern of cities, and 1-degree lines of latitude and longitude.

The scale is 1:2,500,000, or 1 inch equals 40 miles. Printed in 7 colors on 2 sheets, each about 40 x 50 inches. Full map size is about 80 x 50 inches.

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Fryer & Simpson's Pieozchalski 1, nw se ne 29-3s-1w, drlg.

Wayne County: Ryan Oil's Matchett 1, nw nw se 19-1n-6e, lcn.

Deep Rock's Ulysses 1, ne nw nw 30-1n-6e, lcn.

Robinson & Puckett's Hale 1, ne ne ne 19-2n-7e, drlg.

White County: C. A. Lynch's Golden 1, ne se se 21-5s-14w, drlg.

INDIANA

Elkhart County: Floyd Lee's Fisher 1, 36-38n-5e, lcn.

Gibson County: British American et al's Hobson et al 1, nw se sw 16-3s-13w, lcn.

Greene County: W. L. Lichlyter's Fulity 1, sw ne se 23-8n-3w, lcn.

Posey County: Paul Rossi's Rippey 1, se se nw 30-6s-13w, lcn.

Sullivan County: Andros Gulde et al's Mahan 1, 9-9n-8w, lcn.

Vandenburg County: C. R. Craft's Ireland 1, nw nw se 14-4s-10w, lcn.

Warrick County: John E. McCauley's Beasley et al 1, 12-6s-8w, lcn.

KANSAS

Rooks County: Cities Service's Milner 1, sw sw ne 17-8s-18w, brr.

Sumner County: Marion Oil's Worden 1, se se sw 20-30s-2e, 12-in. at 100.

KENTUCKY

Daviess County: Ownesboro Forging Co.'s Fee 1, 17-P-29, dr.

Sylvester Yunkers' Mayfield 1, 5-N-32, dr.

J. E. Ellis et al's Shipp Heirs 1, 12-P-28, dr.

Henderson County: Neely & Zogg's Cosby-Inglehart 1, 6-0-26, lcn.

Cherry & Kidd et al's McNeely 1, 23-Q-20, lcn.

Lincoln County: Calif. Co.'s Spears 1, 13-L-57, lcn.

Ohio County: Ryan Oil's Smith 1, 15-J-31, lcn.

NORTH LOUISIANA

Richland Parish: Lion Oil Co.'s Williams 1, 660 fr sl 1984 fr el 8-14n-5e, lcn.

Roy L. Fisher's Sarah F. Cooper 1, csw nw se 21-17n-7e, lcn.

SOUTH LOUISIANA

Acadia Parish: Sun's Stella Freeland 1, 3379 n 460 e of swc 28-9s-1w, ne outpost Egan fld, dk up 10,800-ft test.

MICHIGAN

Allegan County: J. E. Hood's Taylor 1, ne sw se 20-1n-16w, lcn.

Arenac County: American & Michigan's Durham 1, sw sw nw 19-19n-5e, rig.

Bay County: Richard Steinhort's Bishop 1, se sw se 1-16n-4e, lcn.

Gratiot County: C. L. Maguire's Redman 1, ne nw ne 2-11n-4w, dr.

Isabella County: Taggart Bros. Co.'s Hill 5, n½ se se 33-14n-6w, dr.

Missaukee County: Sun's Land Co. 1, sw sw sw 28-23n-8w, rig.

MISSISSIPPI

Madison County: Salt Dome Oil Corp.'s E. A. Mansell Unit 1, nw ne 25-11n-4e, lcn.

MONTANA

Big Horn County: MacKinney O&G's Ottun 5, c nw nw 3-1s-34e, deep test, lcn.

NEBRASKA

Furnas County: Earl E. Evans' Wilcox 1, sw sw se 32-3n-29w, rur.

NEW MEXICO

Chaves County: Magnolia's Black Hills Unit 1, c nw ne 31-17s-20e, on 17,626-ac unit, mim for 8000-ft rotary Ellenburger test.

Quay County: Jensen Oil Co.'s First Nat'l Bank 1, 1490 nsl 1490 wel 27-10n-31e, 6 mi se Tucumcari, lcn.

OHIO

Ashland County: Ohio Fuel's Jesse Workman 1, se sw 19, Lake Township.

OKLAHOMA

Grant County: William J. Sherry's Staggers 1, ne sw sw 4-25n-3w, drlg 430.

Osage County: A. G. Oliphant's Osage 1, sw ne ne 21-25n-4e, c&p.

WEST TEXAS

Andrews County: Shell's W. F. Scarborough 1-E, 662 nsl 806 ewl PSL 11, blk A-31, twin to Wichita-Albany lime producer, Union fld, 11,000 ft new Ellenburger pay test.

Crockett County: T. W.-J. M. Loffland Jr.'s V. B. Cox 3, se se se T.C. Ry. 40, blk ST, slim-hole test, elev 2272, dr 960.

Upton County: Elder & Rusell's Fee 1, ne sw ne sec 94, blk Y, F. Rooney sur, 1 mi ne of Crane-Cowden fld, 3000-ft cable test.

Winkler County: Sunray Oil Corp.s Sealy-Smith-Stanolind 1, c se se sec 31, blk A, G&MMB&A sur, 1¾ mi e of N. Monahans fld, L. Permian test.

WEST CENTRAL TEXAS

Shackelford County: Paul P. Steed-A. F. Knappenberger's Newell 1, 330 wel 996 nsl E. T. Ry. 59, 1250-ft cable test.

EAST TEXAS

Hill County: Robt. M. Bass et al's John Gerek 1, 330 out nec of 160.4-ac tr, or 330 fr nwl 3000 fr swl E. P. H. Heath sur, 3 mi nw of West, dr 945.

Houston County: Magnolia's Southern Pine Lumber Co. 1-A, 330 sw of nel 1538 nw of sel of 110-ac tr, Leonard Williams sur, 2 mi se Weches, lcn Woodbine test.

EAST TEXAS BORDER COUNTIES

Angelina County: Robert Y. Walker's Angelina Hardwood Co. 1, 330 nw of sel 330 ne of swl 634-ac tr opposite swc Z. C. Johnson sur, in R. K. Goodloe sur, 5000-ft test.

NORTH TEXAS

Archer County: Smiley-Norwood Dr. Co.'s E. P. Griffin 1, 1170 out nwc blk 19, Palo Pinto CSL sur, 2000-ft rotary test.

Texola Dr. Co.'s W. I. Pace-Levy 1, 330 out m/n/nec C. K. Simomns sur, Ellenburger test.

Cooke County: Sun's Carson Unit 1, 467 out nec of 38.95-ac unit, or 467 snl 1600 ewl J. L. Hodges sur, for 4300-ft Ellenburger test.

Wichita County: J. D. Thweatt et al's W. F. George 1, 1748 snl 1700 ewl GC&SF Ry. 3, 2300-ft rotary test.

TEXAS PANHANDLE

Collingsworth County: Bridgeport Oil Co.'s A. C. Hughes 2, sw se se H&GN Ry. 36, blk 11, dr 110 ft.

SOUTH CENTRAL TEXAS

Atascosa County: Texas Co.'s R. B. Love 1, 467 fr nw&swl 112.1-ac lse, out of sec J. Poitevent sur 3, 1 mi nw Charlotte, 6800 se Humble's El Chylek, nearest Charlotte fld Edwards li 7000-ft test, lcn.

Milam County: W. F. Glen's A. R. O'Neal 1, 1400 fr nl 990 fr wl 270-ac lse, Jose Leal sur, 4000-ft test.

Southwestern Oil Co.'s A. R. & J. Ealand 1, 440 fr nwyl/sel 1100 fr nely/nel 660-ac lse and Wm. McFaddin sur, 2500-ft test.

SOUTHWEST TEXAS

Duval County: R. S. Hays and Newman Bros. Drlg. Co.'s J. F. Welder Heirs 1, 330 fr s&wl 80-ac lse, being 3½ nw¼ Geo. Bodet sur 70, 1 mi e of N. Loma Novia fld, 3100-ft test.

H. H. Howell's Lizzie Singer 2, 1650 fr nl 1650 fr el 785-ac lse, 185 fr nl 1650 fr el G. Cumberland sur 4, on e flk Palangana salt dome, ru 5500-ft test.

McMullen County: Joe C. Palmer's Cooper & Martin 1, 330 fr n&el s½ sect 6 ETRR sur, on 80-ac lse, Hagist Rch, 4½ mi sw Loma Alta-Wilcox fld, 3000-ft test.

LOWER TEXAS COAST

Caldwell County: Stanley A. Thompson's Lydia Dannelly Carvenka 1, (OWDD) 330 fr swl 330 fr sly/wl 55-ac lse, Jonathan Burleson sur, otd 2160, top Glenrose 2750, dr 2920.

San Patricio County: Southern Minerals Corp.'s John R. & Floy L. Beasley 1, 990 fr sel 3200 fr nel 1004-ac lse, 335 fr nel V. Juarez sur, mim 5250-ft test.

UPPER TEXAS COAST

Chambers County: John W. Mecom's Cade et al 1-B, 300.4 se of sel lot 14, 209.97 ne of nel lot 15 sbdn C. T. Cade sur, 575-ac lse, se flk High Island Dome, 7500-ft test.

Montgomery County: McKay Donkin-Lloyd Smith's J. G. Browder 1, 330 fr nl 660 fr el 65-ac lse, de la Garza sur, 10,000-ft test.

Wharton County: Lakeview Oil Co.'s J. E. J. Johnston 1, 396 fr nel 731 fr sel 150.56-ac lse, I&GN sur sect 15 and sect 22, s Lke View gas prod, 6000-ft test.

UTAH

Carbon County: Pacific Western's Unit 1, c se ne 24-14s-7e, Gordan Creek, 10,000 ft test.

Daggett County: Mountain Fuel Supply's Murphy 6-w, nw se nw 22-3n-24e, Clay Basin fld, deep test below Dakota gas zone, 6000 ft.

WYOMING

Carbon County: Texas Co.'s Unit 1, ne ne se 14-20n-81w, Mill Creek structure, mi.

Fremont County: Texas Co.'s Unit 3, sw ne nw 1-33n-95w, Alkali Butte, lcn.

Hot Springs County: Continental's Gov't. 2, sw se sw 27-43n-91w, Lake Creek, lcn.

Sweetwater County: Cities Service's Geier 1, sw ne nw 1-12n-9'w, E. Cherokee Ridge, 5000-ft test.

WESTERN CANADA

Central Alberta Plains—Kinsella: Imperial Oil's Kinsella 17, lsd 7 14-46-11w4th, lcn.

Imperial Oil's Kinsella 18, lsd 11 27-45-10w4th, drlg.

Duvernay: Imperial Oil's Duvernay 2, lsd 11 29-55-12w4th, drlg.

Edgerton: Edgerton Oils' Edgerton 4, lsd 10 18-43-4w4th, drlg.

SQUEAKS from the BULL WHEEL

This Curious World

The woman who thinks no man is good enough for her, may be right. But more often she is left.

One time a guy likes to see a girl stick to her knitting is when she's wearing a bathing suit.

Wedding ring: The original one-man band.

The reason a dog has so many friends is that his tail wags instead of his tongue.

A child of Hollywood admitted he didn't have any brothers or sisters but boasted of three papas by his first mamma and four mammas by his last papa.

Happy Hunting Ground

Tourist: What do you do all day?
Indian: Hunt and drink.
Tourist: What do you hunt?
Indian: Drink.

Let's Keep Him

Doctor (after examining patient): I don't like the looks of your husband, Mrs. Whippletree.

Mrs. W.: Neither do I doctor. But most of the time he's good to our children.

Trumped

Sam: Does you believe in dese heah women clubs?

Ham: Only as a las' resoht, Sam, only as a las' resoht; an' den only when de woman is so big you can't handle her in no udda way.

Nitey Nite

Mr. Bore: Well, good night. Hope I haven't kept you up too late.

Host: Oh, no, not at all. We would have been getting up soon, any way.

Menagerie

"My dad is an Eagle, an Elk, a Moose and a Lion," one youngster boasted.

"Yeah?" gasped his wondering companion. "How much does it cost to see him?"

Double Benefit

Prospective Employe: Do you give your help two weeks' vacation?

Boss: No, a month—two weeks when I go on mine and two weeks when they go on theirs!

For Pete's Sake!

Stubborn Citizen: "I wouldn't vote for you if you were St. Peter himself."

Candidate: "If I were St. Peter, my friend, you wouldn't be in my precinct."

Showoff

Whether or not a man has more courage than a woman, he doesn't get half the chance to show his backbone.

Current Topic

He was happy in the thought that his wife believed his story of staying home every night during her four-weeks trip until she got the electric bill and found it called for a payment of 60 cents less the usual 10 percent discount.

Facial

That strange look on his wife's face, the husband explained, was brought about by a studied effort to resemble her latest photograph.

Call For Rescue Squad

Second Stenog: "My boy friend is a caveman."

First Stenog: "The primitive type, I guess."

Second S.: "Nope. When I kiss him, he caves in."

Such Goings On

Customer: "So now you and your son are carrying on the business together?"

Owner: "Not exactly. I run the business and my son does the carrying on."

Consolation

Smitty: "Sorry, old man, to hear about your wife running away with the butler."

Jonesy: "Oh, that's all right. I was going to fire him anyway."

Loyalty

She was skinny, hatchet-faced, squint-eyed and drawn.

"Oh, I just love nature," she observed as she gazed from the train window upon the snow-topped mountain scene.

"That's loyalty," the guy across from her remarked to his companion, "after what nature did to her."

Fooled Nobody

A corpulent maiden named Kroll,
Had a notion exceedingly droll:
At a masquerade ball,
Dressed in nothing at all,
She backed in as a Parker House roll.

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MEN IN THE INDUSTRY NEWS

M. L. (Verne) Mayfield and **L. I. (Bob) Mistrot,** petroleum engineers, have organized the Petroleum Engineering Service, specializing in field reservoir studies, core analyses, evaluation and production management, with offices in the Mellie Esperson Building, Houston. Mistrot was on the petroleum engineering staff of Arkansas Fuel Oil Company

Verne Mayfield

L. I. Mistrot

prior toserving PAW as analyst and assistant district director of the Natural Gas and Natural Gasoline Division. Mayfield was on the petroleum engineering staff of Cities Service Oil Company, chief engineer for Cotton Valley Operators Committee, and official of PAW, and technical advisor-engineer to the Petroleum Industry Committee prior to entering the consulting field.

»

O. A. Newport has been named acting superintendent of the East Texas-Louisiana division of The Texas Pipe Line Company with headquarters in Lafayette, La., succeeding the late **A. D. Riley.**

»

B. W. Beebe, chief geologist for The Bay Petroleum Corporation, has been transferred from Wichita, Kansas, to the general offices in Denver, where he will assume direction of the company's exploration activities. **E. L. Birmingham, Jr.,** Oklahoma district geologist for the company, will assume direction of the Mid-Continent Division office at Wichita. **E. L. McCown,** formerly consuling geologist at Oklahoma City, will replace Birmingham as Oklahoma district geologist, with headquarters in the company's division office, at Wichita.

»

John L. Eppler, W. T. Eppler and **Nat Friedman,** all of Houston, have organized the Rio Seco Oil Company, Inc., as a Texas corporation.

»

Hugh McCloskey, formerly in the legal department of The Texas Company in Houston, has been transferred to the New York office. McCloskey had been doing labor relations work in the Houston office since 1945.

»

G. Frederick Shepherd has resigned as geologist for William Helis, independent operator of New Orleans, and has entered private practice.

John E. Elliott is the head of Production Engineers, Inc., new exploration firm in Tulsa. Associates are **Tom L. Hogue,** formerly with the FBI; **Forrest R. Rees,** consulting geologist; **George E. Summers,** land and production man, and **Patrick Shannon.**

»

F. Julius Fohs, founder of Fohs Oil Company, having sold his interest in the Company, has resigned as president, but will maintain an office as consulting geologist specializing in oil and gas finding in the Esperson Building, Houston. He has been active in the industry, both as geologist and oil operator, for 33 years. After a vacation at his summer home in New Milford, Connecticut, he plans to return to Houston about October 1.

»

M. O. Rife, superintendent of production for the Fort Worth District, Gulf Oil Corporation, will retire August 1. He has been with Gulf and affiliates for 43 years. He will be succeeded by **E. A. Wahlstrom,** former director of production for PAW District 3. Wahlstrom joined Gulf in May, 1945.

»

Major Logan C. Waterman has rejoined the Petroleum Rectifying Company after serving in the Army Air Forces for approximately 3½ years, two years of which were spent overseas. He will be located in the Petreco Houston office in an executive engineering capacity.

»

R. F. (Ted) Bartlett, Jr., has rejoined the Dallas staff of The Cooper-Bessemer Corporation as sales engineer, following 5 years of service in the Army. He had been a staff member from 1934 until 1941. He served with the 137th Ordnance Maintenance Battalion of the 16th Armored Division and attained the rank of lieutenant colonel.

»

Dale Rogers, Jr., Houston, has been named director of advertising and sales promotion of the Mid-Continent Petroleum Company, Tulsa. He had been associated with Radcliffe Advertising Agency in Dallas, and was also on the advertising staff of THE OIL WEEKLY.

»

Frank M. Hawley has been elected president of the Morse Chain Company, Ithaca and Detroit, a subsidiary of Borg-Warner Corporation, to succeed **D. B. Perry,** who will continue with the company as a vice president. Hawley was appointed a vice president and general manager of the company in 1945. He has been associated with the company since 1919. **Ray P. Johnson,** a director since 1936, was elected a vice president. He has been with the company since 1930.

Frank M. Hawley

Harold L. Brown and **John H. Moran** have been appointed sales representatives of Oil Center Tool Company, Houston. Brown started his career in the oil industry as a roughneck. He has had ten years experience in Oklahoma and Texas fields as specialty equipment salesman. Moran entered the oil industry in 1910. He spent four years in the Rocky

Harold L. Brown

John H. Moran

Mountain area and later engaged in export sales work in New York. He went to Houston in 1939 as an oil field specialty salesman. Moran is a former secretary of the Mid-Continent Division of API.

»

Arthur S. Davenport, Tulsa, has been appointed assistant to the secretary of the Interstate Oil Compact Commission. He will handle the Compact's information services and publications, and will serve as legal assistant. Davenport was associated for 12 years with the Rinehart's Oil Reports.

»

Joe Manlipag, formerly employed by a defense plant in Arizona, has joined the staff of the Anderson-Prichard Oil Company in Oklahoma City as a draftsman.

»

J. H. Martin of the International Derrick & Equipment Company, has been transferred to the Oklahoma City office from Hutchinson, Kansas.

»

Rubert J. Lindquist, financial vice president of Standard Oil Company of Indiana, was named a director. His election followed the resignation of **Edward G. Seubert** in connection with his retirement from business on his 70th birthday. Lindquist was brought into the Standard management last September to head the financial, accounting, and tax affairs.

»

John J. Synon was added to the staff of the Western Oil and Gas Association as a special public relations representative. Since his release from the Army Air Forces in 1942, Synon has been engaged in public relations work with E. I. du Pont de Nemours & Company, and with the Joseph W. Hicks organization of Chicago.

C. K. Sherk has been appointed purchasing agent of the merchandising division of The National Supply Company, succeeding **John Kirby,** who is remaining with the company in an advisory capacity preparatory to his retirement. Sherk joined the company in 1936 and has filled a number of assignments in the field and general sales organization. He will have his headquarters in Toledo, Ohio.

C. K. Sherk

A. C. Wimmer, treasurer of Oil Well Supply Company, Oklahoma City, has retired after 30 years with the company, and will make his home in Dallas. He will be succeeded by **G. F. Goetzinger,** former credit manager.

W. E. Hassebrook, research and development engineer of Halliburton Oil Well Cementing Company, Duncan Okla., discussed problems and new developments in cementing casing opposite producing formations before the Oklahoma Society of Petroleum Engineers, Oklahoma City. **G. S. McDonals,** drilling engineer of Gulf Oil Corporation, Tulsa, discussed specific problems, and **J. R. Roberts,** research engineer of Lone Star Cement Company, Dallas, discussed properties of cement.

Walter L. Jewett, chief engineer for Progressive Welder Company for the past 9 months, has been appointed manager of development engineering, reporting directly to the president. Jewett has been with the company for 10 years, rising from a resistance welding machine designer to his present position. **Clifford M. Manzer** has been named to succeed him as chief engineer in charge of all engineering activities. Manzer has a broad background of experience in design and operation of resistance welding equipment of all types. For the past 22 years he has been with General Electric Company, the last 11 years in charge of research, development and manufacturing processes on resistance welding at the Lynn, Massachusetts, plant.

John S. Pfarr, technical director and manager of the manufacturing department, Leonard Refineries, Inc., has been elected a member of the board of directors. The election meeting was held at Alma, Michigan.

Robert Knox, formerly with the Kansas Geological Survey at Lawrence, has joined the Sinclair-Wyoming Oil Company staff and will be stationed in the Illinois Basin area.

Harry M. Batis, former head of the accounting department Oil & Gas Division, Texas Railroad Commission, has been appointed chief supervisor.

Scott Thompson, formerly chief engineer for W. C. Norris Manufacturer, Inc., is now with American Iron & Machine Works Company, Oklahoma City, as a production development engineer.

W. A. Heath, supervisory engineer of water flood projects for Phillips Petroleum Company, Bartlesville, Okla., discussed "Unitization of Oil Pools for Secondary Recovery Development" before the Pennsylvania Grade Crude Oil Association.

Howard J. Mullin is appointed manager of sales, St. Louis district, of Carnegie-Illinois Steel Corporation, succeeding **Robert J. Korsan, Jr.,** retired. Mullin's U. S. Steel service began in 1927 in the Chicago district sales office of Carnegie-Illinois. Moving up through various sales positions in the Milwaukee and Kansas City district offices, he was assigned to St. Louis district sales office last January as assistant sales manager. He is a graduate of Dartmouth and has studied at Northwestern and Wisconsin universities. Korsan, retired manager of the

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WELL WORKS COMPANY
BEAUMONT, TEXAS

St. Louis district sales office, was recently awarded the gold Gary service medal, emblematic of 50 years of continuous service with the U. S. Steel Corporation. A native of Norway, Korsan became connected with the company in 1896 in the Chicago sales office as an office boy. He came to St. Louis as district manager of sales in 1935.

»

Thomas P. Riley has been appointed general superintendent of Carnegie-Illinois Steel Corporation's Johnstown-Lorain Works at Johnstown, Pennsylvania. He began with U. S. Steel at American Sheet & Tin Plate Company's Dover Works, Dover, Ohio, in 1908, and went to the company's Gary, Indiana, plant in 1911.

»

Eddie H. Royle will represent the American Iron & Machine Works Company in the Ft. Worth, Dallas and North Texas territory, handling all sales and service in the area from headquarters in Wichita Falls, Texas. He served during the war as a pilot in the European Theater, and before the war spent 7 years in the sales department of the company's Oklahoma City plant.

B. F. Green has been named comptroller of the Franks Manufacturing Corporation, Tulsa, in addition to being assistant to the president. Before joining the company he was an independent operator, and was president of Refiners Production Company, which brought in some of the largest wells in the Oklahoma City field.

B. F. Green

»

A. E. Ashcraft, vice president in charge of manufacturing of Fairbanks, Morse & Company, Chicago, has retired, but continues as a director of the company. **C. H. Morse, III,** vice president, has been placed in charge of all manufacturing plants and operations. **Henry M. Haase** has been appointed manager of the Beloit, Wisconsin, works of the company following the resignation of **A. C. Howard. Haase** joined the organization as an assistant in the experimental department about 15 years ago.

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Deaths

Charles L. McMahon, 70, independent oil operator, died in Tulsa June 23. Head of C. L. McMahon, Inc., he was active in Tulsa civic affairs and Catholic activities. Pope Pius XI conferred upon him the Degree of Knight of St. Gregory for distinguished service in the church in 1926. McMahon moved to Tulsa in 1926 from Okmulgee, Okla., where he had been engaged in the oil business as an independent operator since 1913. He first moved to Bartlesville in what was then Indian Territory in 1905, to represent the Barnsdall interests. At Okmulgee he organized the present McMahon company.

Charles L. McMahon

»

E. L. Smith, 60, independent oil operator of Dallas and a director of the Dallas National Bank, died of a heart attack suffered while he was attending a banquet of The American Petroleum Institute in Dallas, June 24. He was a former president of the Mid-Continent Oil and Gas Association and the Texas Petroleum Council, and of the City National Bank in Mexia, where he had resided before moving to Dallas.

»

Marcus C. Hullings, 73, Tulsa, retired oil field worker and former drilling contractor, died in Tulsa June 20. He was last employed with the Baird Manufacturing Company.

»

A. L. Meeks, 75, Tulsa oil man and former representative of the S. M. Jones Company, died in Tulsa June 20 of a heart ailment. He retired from the Jones Company four years ago.

M. B. Blake died in Oklahoma City June 16 of a heart attack. He had lived in Oklahoma City since 1910, and had been engaged in the oil business with various companies.

»

Art L. Walker, 65, former chairman of the Oklahoma Corporation Commission, died in Oklahoma City June 22. Death was attributed to a cerebral hemorrhage. In 1916 he was appointed to organize the oil and gas Conservation Department of the Corporation Commission.

»

Roy George Curran, 40, Tulsa, an employe of The Pure Oil Company for nine years, died June 20 following a three-months illness.

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HOUSTON, TEXAS

Brown Buys Building

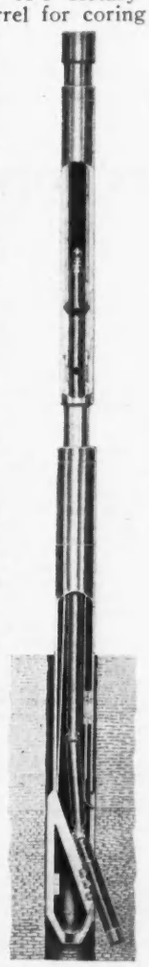
The Brown Instrument Company, division of Minneapolis-Honeywell Regulator Company, Philadelphia, has purchased the five-story building at 2221 North Broad Street, Philadelphia, which it leased last summer to provide storage space for materials, supplies and items manufactured under heavy war orders and production. Since peacetime orders have continued on the same level, even more than 57,000 square feet of floor space will be required shortly.

Mid-Continent Office Opened

Mid-Continent Supply Company has opened an office in the Patterson Building, Denver, which will be supervised by Barney Blair. Blair joined the company in 1937 at Lisbon, La., and has since been a company representative in six other offices.

A-1 Bit Offers Tool for Coring All Types of Productive Formations

The A-1 Bit and Tool Company, Houston, is offering the A-1 Rotary-type Side Wall Core Barrel for coring all types of productive formations, both hard and soft. It is available on a rental service basis with operator supervision from established service points at Houston and Corpus Christi, Texas; Lafayette, La.; Natchez and Laurel, Miss. Service will soon be expanded to offices in Oklahoma and California.



The Side Wall Core Barrel cuts 1½-inch outside diameter cores in a definite plane with the well bore by regular rotary equipment, plus a coring reel and sand line. Cores are cut by rotating the drill pipe and with circulation, and have sufficient volume to allow complete analysis for permeability, porosity, oil and water content, grain size, chloride content and gravity. Any number of cores can be cut without removing the drill pipe from the hole. The barrel can be run in any size hole from 8½-inch to 12¼-inch diameter. The minimum inside diameter required through drill pipe and tool joints is 2-13/16 inches.

The tool realizes the many advantages to be gained by drilling the well, and running the electric log before coring. It keeps cores uncontaminated because they are cut quickly and completely enclosed in an inner barrel, and are cut only where wanted, eliminating coring of non-essential areas or sections.

At American Iron, Machine Works Banquet

American Iron & Machine Works Company recently held a general sales meeting at Oklahoma City, for the purpose of discussing new and improved methods of service to the oil industry. Final meeting of the three-day session was a banquet in the Beacon Club.

Two Stores Opened and Personnel Changes Are Announced by HOMCO

Houston Oil Field Material Company, Inc., has opened branch stores at Eunice, N. M., and Mamou, La. The two stores will maintain complete stocks of supplies, drilling muds and chemicals.

R. M. Freeman has been named store manager at Eunice, and Jack Stone will be mud engineer. He was formerly located in the Odessa, Texas, store.

W. C. Johnson, who was store manager at Natchez, Miss., has transferred in the same capacity to the new Mamou store, and will be replaced in Natchez by K. R. Murphy, who has been promoted to store manager from salesman. C. S. Maxiem, warehouseman at Natchez, has also been transferred to Mamou as salesman. B. W. Stephenson has moved to the Mamou store from New Iberia, La., where he was warehouseman.

Two men have been transferred to the Houston store: Joe B. Pogue, cutting and fishing tool operator at Brookhaven; and Myron Vogan, warehouseman at Eunice. W. G. Seis has been transferred from the Victoria store to the Kenedy, Texas, branch office as salesman.

Barium Adds Unit

The Barium Steel Corporation has acquired 100 percent control of the Detroit Steel Casting Company, producers of carbon and alloy steel castings. Barium now has ten operating subsidiaries engaged in the production of diversified lines of steel and metal products.

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TRADING POST SECTION

ON PAGE 56 OF THIS ISSUE

Eastern Sales Office Moved to Chicago

Edw. S. Christiansen Company, Chicago, has moved its eastern division sales offices from the 32nd floor of 30 Rockefeller Plaza, New York, to new offices and a light metals showroom on the mezzanine floor of that building. The company plans to exhibit all forms of aluminum and magnesium raw materials as well as semi and fully fabricated assemblies and finished consumer goods. Products on display represent developments of the nation's leading fabricators, foundries, consumers and research organizations. The displays will be changed regularly to show developments in new applications. W. P. Sigler is still in charge as eastern sales manager. The company has another showroom in Los Angeles, and intends to establish showrooms in other key cities of America.

Engineering Laboratories Opens New Plant in Dallas Area

Engineering Laboratories, Inc., Tulsa, which has completed a 24,000-square foot plant between Garland and Dallas, Texas, has transferred all its heavy equipment there and is manufacturing rotary rock bits, rotary drill trucks, water trucks, tenders and other heavy articles. The plant now is in full production. W. G. Green, for the past 15 years in charge of the Tulsa plant and president of the company, is over both Tulsa and Dallas industries. D. W. Varel, formerly assistant to the president of Packard Motor Car Company, is executive vice president at the Dallas plant.

International Harvester Lists Personnel Changes

L. W. Pierson, who has been Southwest motor truck district sales manager for International Harvester Company two years, has been appointed assistant manager of sales specializing in fleet and national account sales. He has been connected with the company since 1922. R. M. Buzard, who also entered the company's employ in 1922 and who has been motor truck district manager of the Western District for the past 2½ years, has been promoted to assistant manager of sales specializing in operational phases of the business. The two executives will share with W. K. Perkins, manager of sales, full operating responsibilities of the motor truck division sales department. J. T. Sullivan, formerly Central District Manager, has been transferred to the Southwest District replacing Pierson. R. S. Byers, formerly manager of the Eastern Division, replaces Buzard in the Western District.

Lufkin Official Elected to Gear Manufacturers Executive Group

Walter W. Trout, vice president and general manager of Lufkin Foundry & Machine Company, was elected a member of the executive committee of the American Gear Manufacturers Association at the annual meeting in Hot Springs, Va.

Thomas J. Bannan was elected president; R. B. Tripp, vice president; and Walter L. Schneider, treasurer. N. C. Gion continues as executive secretary.

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